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ABSTRACT

Dealing with token reinforcement, this bibliography contains 240 references, 123 of which are annotated, to documents published between Januar y 1967 and December 1969 in the United States, Britain, and Canada. Criteria for inclusion in the bibliography were: that the behavior be socially useful, that tokens be backed up by primary reinforcers, and that tokens be earned and that backup reinforcers given be commensurate to the number of tokens earned. For each entry, information is given under subjects, stimuli, responses, consequences, procedures, results, and comments by the author of the paper. (Author/SP)

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ANNOTATED BIBLIOGRAPHY ON

TOKEN REINFORCEMENT STUDIES

PUBLISHED 1967-1969

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ANNOTATED BIBLIOGRAPHY ON

TOKEN REINFORCEMENT STUDIES

PUBLISHED 1967-1969

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April 1970

UPPER MIDWEST REGIONAL EDUCATIONAL LABORATORY

(Prepared pursuant to a contract with the U. S. Department of Health, Education, and Welfare, Office of Education)

Description of the bibliography

This annotated bibliography on token reinforcement is the result of a literature search extending over an eight month period. It contains a nearly exhaustive list of references on token reinforcement published from January 1967 through December 1969 in the United States, Canada, and Britain. References for materials published 1967-1969 will continue to appear in such indexes as Research in Education and Current Index to Journals in Education for many months to come; they may be added at a later date. Since CIJE is only one month behind publication dates, journal references should be nearly complete. Papers indexed in RIE are much more behind, but at least RIE through December 1969 has been checked. The total number of references is 240, 123 of which are annotated. The complete papers for nearly all annotated references have been accessed to UMREL's information system. Papers for the non-annotated references could not be obtained, at least at present; however, nearly all non-annotated references are 1) written by authors who have written similar papers which are annotated in the bibliography or 2) written by authors who have used the Ayllon-Azrin token economy model in mental institutions. The latter references are mostly unpublished materials from mental hospitals.

Compilation of the bibliography

These sources were used:

1. Papers in Marvin Daley's personal files.
2. UMREL's Information Search and Recording System (ISRS) holdings:
   - Reading review entries
   - Library holdings (books, papers, reprints)
   - ERIC Collection
   - Psychological Abstracts (January 1967-June 1969)*
   - Current Index to Journals in Education (January - December 1969. First year published)
   - Behaviour Research and Therapy (1969. Before this, references were taken from PA)
   - Journal of Applied Behavior Analysis (1969. Before this, references were taken from PA)
   - NSPI Journal (1969. Before this, references were taken from PA)
   - Papers and reprints ordered from authors, accessed to ISRS
   - Bibliographies of papers and reprints ordered from authors, accessed to ISRS
3. References in J. West (1969)
4. References in L. Ullmann and L. Krasner (1969)

* In June, it was discovered that Current Index to Journals in Education covers all relevant materials in Psychological Abstracts except Journal of Applied Behavior Analysis, Behaviour Research and Therapy, and NSPI Journal. It is much easier to check these three journals and Current Index to Journals in Education than to use Psychological Abstracts. Therefore, we quit using Psychological Abstracts at that time.

5. References in J. W. Barnard and R. Orlando (1967)
6. References is W. C. Becker (1968)
7. References in L. Krasner and J. Atthowe (1968)
8. References in T. Ayllon and N. Azrin (1968)

Criteria for inclusion

1. Behavior must be socially useful (eliminated lever pressing, button pushing, other basic research with humans).
2. Tokens must be backed-up by primary reinforcers.
3. Tokens must be earned and backup reinforcers given commensurate to number of tokens earned.

Bibliography style

The bibliography has been written in telegraphic style, so some verbs and articles have been omitted. The main headings under which information is given are Subjects, Stimuli ,Responses, Consequences, Procedures, Results, and Comments. "Comments" refers to comments by the author of the annotated paper, not of the authors of the UMREL bibliography.

These abbreviations are used:

P-1, P-2, P-3, ...	Phase 1, Phase 2, Phase 3, ... (also period, condition)
TO	timeout
mon.	month, months
min.	minute, minutes
wk.	week, weeks
yr.	year, years
E/S/T/A/O	experimenter, examiner subject teacher assistant, aide observer
BU	backup reinforcers--this abbreviation is not followed by any punctuation, but simply a listing of the backup reinforcers
CR	continuous reinforcement schedule
FR	fixed ratio reinforcement schedule
VR	variable ratio reinforcement schedule
FI	fixed interval reinforcement schedule
VI	variable interval reinforcement schedule

Altman, K. I. Classroom consequation, or the BMs go to school. Unpublished manuscript, University of Wisconsin, January 10, 1968.

The purposes of this review were (a) to summarize research on applied behavior analysis relevant to public classroom consequation, (b) to discuss problems and important considerations involved in applied behavior analysis of classroom behavior. Studies were grouped in the following categories according to nature of consequation employed (1) Teacher attention. (2) Peer attention. (3) Token reinforcement. (4) Vicarious reinforcement. Problems of obtaining teacher cooperation, valid and reliable measurements, and confirmation of stimulus control through experimental design discussed. Implications of these studies for classroom behavior control and future research discussed. (From paper summary). Discussion of token reinforcement includes definition and review of important studies.

Anderson, D. P., Morrow, J. E., & Schleisinger, R. The effects of token reinforcers on the behavior problems of institutionalized female retardates. Paper presented at the meeting of the Western Psychological Association, San Francisco, May 1967.

Atthowe, J. M., Jr., & Krasner, L. Preliminary report on the application of contingent reinforcement procedures (token economy) on a "chronic" psychiatric ward. Journal of Abnormal Psychology, 1968, 73, 37-43. (Reprint)

Subjects: 60 chronic schizophrenics or brain damaged patients. Median age 57, more than 1/3 over 65. 3 general performance classes: 1) 60% required constant supervision, 2) 25% had ground privileges and could leave ward unescorted, 3) 15% required minimal supervision. Ss remained on ward for 2 yr. study.
Stimuli: 86-bed closed ward at VA hospital.
Responses: Increased self care, interaction with other patients, frequency of attendance at scheduled activities, responsibility and interest.
Procedures: P-1: For 6 mo., frequency of target behaviors recorded daily. Data given for 3 wk. period just before token system. P-2: For portion of 3 mo. shaping period, canteen books (served as money) available to Ss requiring constant supervision only if they attended scheduled activities. Only 50% of Ss cared about buying items with books, so for 6 wk., Ss taken to canteen and urged to buy. All contingencies abandoned and patients further encouraged to use books. Last 2 wk., tokens given on non-contingent basis. P-3: Reinforcement contingent on performance; whenever possible accompanied by social approval and verbal description of contingency.
Consequences: Tokens similar to credit cards; 7 colors, each with different exchange value. Typical BU (cigarettes, money, passes, watching television--regulated by automatic timer) as well as idiosyncratic (e.g., sitting on ward, feeding kittens). Immediate reinforcement except for Ss who attended scheduled activities by themselves who were paid weekly.

Specific number of tokens charged for especially undesirable behaviors or for not paying tokens required by system.
Results: P-1: Frequency of attendance at scheduled activities averaged 5.85 hr./wk. Average 75 infractions/wk. for not getting out of bed, making bed, and leaving bed area on time. P-3: Frequency of attendance at scheduled activities averaged 8.5, except for 3 mo. when 2 tokens instead of 1 were given per hr. of attendance. Average then was 9.2. Token given daily contingent upon no recorded infractions in any morning routine. In 1st wk. following contingency system, infractions fell to 30, then 18. Declined steadily to 5/wk. by end of 9 wk. and averaged 9/wk. during last 6 mo. Significant increase shown in social interaction (weekly group meetings) measured by Palo Alto Group Psychotherapy scale. Rater reliability of scale .90. Before project 80% of Ss had never been off hospital grounds for period of 8 hr. Afterwards 19% of Ss went on overnight or longer passes, 17% on day passes, 12% out on accompanied passes for first time. 24 Ss discharged and 8 transferred to more active, discharge oriented ward programs as compared to 11 discharges and no transfers in preceding 11 mo. Of 24 Ss released, 11 returned to hospital within 9 mo. Tokens were given for no bed-wetting, and this behavior practically disappeared in 12 Ss who were bed-wetters at start of project.
Comments: 12 Ss who accumulated 120 tokens and worked 25 hr./wk. in special vocational assignments allowed to become independent of token system and had access to all privileges and greater status. Tokens not effective for 10% of Ss who previously "catatonically" withdrawn. Steps had to be taken for hoarding and devaluation of tokens. (These are 1st yr. results).

Ayllon, T., & Azrin, N. H. Reinforcer sampling: A technique for increasing the behavior of mental patients. Journal of Applied Behavior Analysis, 1968, 1, 13-20. (a)

Subjects: Mental patients in motivating environment (Ayllon and Azrin, 1968b).
Responses: Variety of target behaviors.
Consequences: Tokens, BU various reinforcing events.
Procedures: Many attempts had been made to increase Ss' utilization of reinforcers available, but in practice, some reinforcers were rarely utilized by specific patients. Possible solution to problem suggested by considering selection of reinforcer as response to be strengthened. Almost all theories of reinforcement state probability of occurrence of previously reinforced response is greatest when stimulus situation is same as had existed at moment that response had been reinforced previously. If selection of event by patient is to be maximal, situation should be identical to situation that had previously existed when selection resulted in delivery of reinforcement event. To make situations truly identical would be not only reproducing stimuli associated with reinforcement, but presenting reinforcer itself. This seems at first impossible to execute since actual delivery of reinforcer before desired response rather than after violates usual sequence of operant conditioning. Possible solution: Present reinforcer very briefly before response, thereby reproducing all of stimuli associated with onset of reinforcer; remainder of reinforcer could be delivered after desired response is acquired by principle of operant conditioning. Second problem: How to arrange for subject to engage in initial part of reinforcing event. Individual may be verbally instructed to sample reinforcer. Experiment attempts to evaluate "reinforcer sampling" as method of increasing reinforcer use.

General experimental design: Compare reinforcer utilization during reinforcer sampling procedure with utilization during usual non-sampling procedure. Reinforcing events studied: Attendance at walks, movies, and musical activities. ABA design.
Experiment I: Procedures: 15 min. walk sampled.
Results: Reinforcer sampling generated participation in walks by patients who had not been utilizing reinforcer and increased frequency of participation by those patients who were already participating.
Experiment II: Procedures: Music period was reinforcer.
Results: Reinforcer sampling procedure especially effective in increasing attendance at music. Out of 20 patients who had not been attending this activity, 16 began attending during sampling procedures and 11 of 16 continued to do so even after sampling procedure was terminated.
Experiment III: Procedures: Attendance at movie was reinforcer.
Results: Effective sampling procedure for movies and reversibility of effect were not as great as for walks and music, but confirms results of Experiments I and II.
Comments: From practical point of view, may not be desirable to use reinforcer sampling merely on short term basis. Seems appropriate to adopt standard procedure for as long as reinforcer is being used to maintain desired behavior. Effectiveness of technique does not seem to depend on providing information or familiarization. Patients already "knew" what reinforcer was; technique seemed to trigger participation in it. One limitation in using reinforcer sampling technique would be possible satiation. Authors distinguish between reinforcer sampling technique and simply viewing reinforcer. Has been used by other operant conditioners. Technique would appear to be most useful when reinforcers given infrequently, since frequent delivery inherently provides sampling procedure. Study did not isolate any aspects of reinforcer sampling procedure at critical factor (from article Discussion section).

Ayllon, T., & Azrin, N. H. The token economy: A motivational system for therapy and rehabilitation. New York: Appleton-Century-Crofts, 1968. (b)

Subjects: Patients on special ward for those most resistant to currently used procedures. Ss had been transferred from other wards at suggestion of their supervisors. Maximum number: 46. Median age: 50 yr. Median length of hospitalization: 16 yr.
Stimuli: Ward environment.
Responses: Constructive and useful behaviors categorized in everyday terms allowing a minimum of conflicting interpretation.
Consequences: BU every conceivable source of motivation and unlimited opportunity to gain access to that event for each individual. Available 24 hr./day, 7 days/wk. Wall-mounted cigarette dispenser, wall-mounted cigarette lighter, coin-operated television and radio, coin-operated turnstile for access to a given location.
Procedures: Instead of coercive procedures, Es discouraged disruptive behavior by delaying slightly availability of positive reinforcers. Chapters of this book which explain specific procedures are entitled: Selection and definition of behavior (Dimensions of behavior rule: Describe behavior in specific terms that require minimum of interpretation. Target behavior rule: Describe desired performance in behavioral terms. Relevance of behavior rule: Teach only those behaviors that will continue to be reinforced after training); discovering reinforcers (Probability of behavior rule: Observe what individual does when opportunity exists. Those activities very probably at given time serve as reinforcers. Verbal request rule: Act immediately upon every verbal request for reinforcer. Variation of reinforcement rule: Use many variations of known reinforcer to discover new ones); maximizing the effectiveness of the

reinforcer (Conditioned reinforcement rule: Provide distinctive and tangible stimulus event to bridge any delay between desired response and delivery of reinforcer. Multiple reinforcer rule: Use many different types of reinforcing stimuli with a given individual. Compatibility of reinforcers rule: Schedule reinforcing activities so they will occur at different times. Reinforcer sampling rule: Before using an event or stimulus as reinforcer, require sampling of reinforcer in situation in which it will be used. Reinforcer exposure rule: At moment of reinforcer availability, display all stimuli that typically occur during reinforcer utilization; if possible, have individual observe another individual actively utilizing reinforcer. Magnitude of reinforcement and satiation); assuring the response-reinforcement relation (Behavior-effect rule: Arrange situation so that behavior produces some enduring change in physical environment. Time and place rule: Specify time and place of response occurrence and reinforcement delivery. Individual responsibility rule: Assign 1 and only 1 individual to act as reinforcing agent for given occasion. Dimensions of reinforcement rule: Specify in physical terms as many dimensions of reinforcer as possible. Automated reinforcement procedure: Use automated means to deliver and record reinforcing event whenever possible. Direct supervision rule: Provide systematic and direct observation of reinforcement procedure. Procedure for multiple reinforcing agents: Use different individuals to implement delivery of reinforcement. Recipient of reinforcement procedure: Use report of reinforcer's recipient as additional check on reinforcement transaction); developing a response (Prompting-shaping rule: In developing a desired response chain, begin by prompting verbally and reinforcing existing response that has a component relation to target behavior; then prompt verbally and reinforce variations of the component that are in direction of target behavior. Response exposure rule: Have learner observe another individual performing desired response. Response sampling rule: Require individual to perform at least initial portions of desired responses); evaluation of the overall reinforcement procedure; administrative and therapeutic considerations. Experiments were conducted to investigate the applicability of rule. Results of these studies may be read under each rule in the book.

Results: Once the reinforcement procedures were effective in establishing functional behaviors, many of the symptomatic behaviors were no longer present and could not be studied. One can only speculate, of course, but it appears that symptomatic behaviors of very disruptive nature were reduced or eliminated because they could not exist side by side with functional behaviors.

Baldwin, V. L. Development of social skills in retardates as a function of three types of reinforcement programs. Dissertation Abstracts, 1967, 27(9-A), 2865.

Ball, T. S. Progress report on the Ward 1-A token economy program. Unpublished manuscript, Pacific State Hospital, Pomona, Calif., July 1967. (a)

Ball, T. S. Token economy (operant conditioning) program. Unpublished manuscript, Pacific State Hospital, Pomona, Calif., 1967. (b)

Barnard, J. W., & Orlando, R. Behavior modification--a bibliography. Unpublished manuscript, George Peabody College for Teachers, 1967. (Also, ERIC ED 18028).

Barrish, H. H., Saunders, M., & Wolf, M. M. Good behavior game: Effects of individual contingencies for group consequences on disruptive behavior in a classroom. Journal of Applied Behavior Analysis, 1969, 2, 119-124.

Subjects: 24 Ss in 4th grade classroom. Divided into 2 teams.
Stimuli: Math, reading materials.
Responses: No out of seat behavior, no talking out. Follow class rules.
Consequences: Wear victory tags. Star on chart. Line up first for lunch (or early if both teams won). Free time 30 min. end of day -- special team projects. If no more than 20 marks in a week, weekly privilege of going to recess 4 min. early.
Procedures: Observation of S behaviors and T attention. When any S broke rule, team received mark. Team with fewest marks (or both teams if less than 5 marks) was reinforced. Losing team would work last 1/2 hr. and/or stay after school to get work done. P-1: Math baseline, reading baseline. P-2: Math game, reading baseline. P-3: Math reversal, reading game. P-4: Math $game_2$, reading game.
Results: Game significantly and reliably modified behaviors. Experimental design (multiple baseline and reversal) showed that effect could be replicated across subject periods and that game had continuing role in maintaining reduced levels of disruptive behaviors. Both teams won 82% of the time. Out of seat behavior decreased somewhat during P-2 even though the game was only in math.

Becker, W. C. Selected references on applications of token reinforcement systems with children Paper presented at the meeting of the American Psychological Association, 1968.

A bibliography of 22 references published from 1963-1968.

Berkowitz, S., Sherry, P. J., & Alphin, B. Teaching self-feeding skills to profound retardates through behavior modification techniques. Maryland Mental Health Newsletter, Rosewood State Hospital, March 1967.

Berman, M. L. Shaping performance on programmed materials. Psychological Reports, 1967, 21, 29-32. Experiment I.

Subjects: 3 males in adult education course, 30-40 yr. old.
Stimuli: Programmed English (Sullivan, 1963).
Responses: Correct responses in shortest possible time.
Consequences: Points. BU money.
Procedures: Material was divided into 100 sections. First 50 sessions were subdivided into 2 equal parts. Particular set of reinforcement contingencies was in effect during each of 2 parts. If S completed 1st session (approximately 18 frames) in 80 min. or less, received 5 points. Allowance for next session reduced to 75 min. If S completed it in more than 80 min., no points. Time allowance increased to 85 min. Error allowance lowered to 9 errors. If S made more than 10 errors, no points. Error allowance increased to 11 errors. P-1: Time and error contingencies. P-2: Time contingency only.
Results: P-1: 38.68 min. (average) per section, 2.40 errors (average) per section. P-2: 24.08 min., 4.96 errors. Decrease in time per section 13.29 min. or 32.7% following dropping of error contingencies. (This data for S^1. Similar for S^2 and S^3).

Berman, M. L. Shaping performance on programmed materials. Psychological Reports, 1967, 21, 29-32. Experiment II.

Subjects: 2 college freshmen.
Stimuli: Physiological psychology program.
Responses: Responses to task materials.
Consequences: Points. BU money.
Procedures I: P-1: Time only contingencies, 1/3 of program. 7 sections. P-2: Removal of experimental conditions. 7 sections. P-3: Reinstatement of experimental conditions. 6 sections.
Results I: When time only contingencies were initiated, speed increased significantly with concomitant increase in errors.
Procedures II: P-1: No contingencies in effect, 1/3 of program. 7 sections. P-2: Removal of experimental conditions. 7 sections. P-3: Reinstatement of experimental conditions. 6 sections.
Results II: When "no contingency" condition was initiated, significant decrease in speed and errors.
Comments: An investigation is under way regarding effects of different step-sizes on rate and accuracy and the choice behavior as a function of different step-sizes. Record of particular time and accuracy contingencies at which Ss switch from one contingency to another compiled,and relationship between speed and accuracy contingencies determined. Data gathered to date indicate the smaller the step-size, the greater the accuracy and speed of Ss.

Berman, M. L. Programming success for the disadvantaged learner. NSPI Journal, 1969, 8 (9), 14-16.

Bijou, S. W. Research in remedial guidance of young retarded children with behavior problems which interfere with academic learning and adjustment. Final Report, June 1968, Illinois University, Urbana, Ill. (Also, ERIC ED 24 196).

Reports research conducted 1964-1968. Objective: Construction of well balanced pre-school program for exceptional children based on application of empirical, behavioral principles. Research began with inquiry as to whether children with severe behavior problems could be treated in nursery school by teachers trained in application of behavior principles. Findings from first year's work indicated that they can. Second year's work:(1) Refined and extended behavior modification techniques with emphasis on shaping verbal behavior ,since this was prevalent deficiency. (2) Institute pre-academic and academic procedures to help child compensate for defective developmental history. After second year children showed great improvement, but due to time limitation could not be given sufficient training to enable them to enter regular school. Third year research was to develop programs for children at level of less severe disturbance but public school exclusion. Fourth year: Refined and formalized materials and procedures developed during third year.

Brief description of principles of teaching technology for exceptional children and research strategy employed. Other chapters include description of children, general organization and operation of preschool, reading, writing, and arithmetic programs developed, behavior modification procedures, parent program, teacher training program.

1. Retarded child with behavior problems analyzed as child with limited repertory

of behavior resulting from interactions in genetic and personal history. Conditions and processes which create restricted repertory include abnormal anatomical structure and physiological functioning, inadequate reinforcement,poor discrimination in perception history, and severe contingent aversive behavior. Other processes include history involving loss of environmental support, strong conflict, frustration, anxiety. Should be emphasized that these conditions and processes do not include concepts like "defective intelligence", "clinically inferred brain damage",.or "familial retardation". (Chapter summary from paper).

2. Data gathered usually in form of frequency of occurrences of objectively defined behaviors and stimulating conditions. Research design usually single S.

3. Reasons for referral of children to nursery school included mental retardation, brain damage, emotional and mental disturbances, severe problem behavior, learning disabilities and learning problems.

4. Program objectives: Eliminate behavior which interferes with socio-academic learning, strengthen desirable cultural behavior and study habits, provide instruction in essential academic knowledge and skills, promote motivation for academic achievement, maintain changes in behavior and motivation outside classroom situation. These are accomplished through behavior modification techniques, programmed academic subjects, contingency management, and parent training. Contingency management includes use of social reinforcements (teacher, peer), tokens plus social with exchange time, TO. Physical characteristics of classroom, curriculum, and operation of class explained. Tokens (marks on sheet) may be exchanged for toys, edibles, playroom activity.

5. Reading program is sight vocabulary program consisting of pre- and post-tests, one word and group word programmed sets, remedial sets, exercises in following directions storybooks, picture phrase cards. Teaching machines used. Writing program designed to enable child to produce coordinated lines and circles within acceptable tolerances, to combine basic forms to print and to recognize letters of alphabet and numbers 1-10 on one-inch line primary paper. Arithmetic program ended with sets involving carrying with three digit numbers and borrowing with two digit numbers.

6. General procedures, monitoring procedures, data collection, and specific procedures for various problems discussed. Case studies given.

7. Parents may become involved when child is exhibiting problems at home, problems are displayed both at home and in class, and parental interaction with child interferes with or does not support remedial procedures in classroom. Ideally problem behavior should be observed firsthand in home.

8. Teacher training includes analysis of basic principles of reinforcement, discrimination generalization, and chaining ; also basic measures of response strength and consideration of functional explanations of behavior. Recommended books: Holland and Skinner (The analysis of behavior), Ferster and Perrott (Behavior principles) Millenson (Principles of behavior analysis), Ullmann and Krasner (Case studies in behavior modification), Sloane and Macauley (Operant procedures in remedial speech and language training), Bijou and Baer (Child development: A systematic and empirical theory, vol. 1), and Smith (Child management). Three films also recommended. Teachers become involved in laboratory experiments with animals, then in classroom with children. Instructions in recording data, finding appropriate reinforcers, scheduling their applications, and management of reinforcement contingencies are also given. Teachers also learn about programming instruction and training other nursery school staff in behavioral management procedures.

Each area listed under 1-8 is dealt with very specifically in this report; many suggestions for implementation in similar environment included.

Birnbrauer, J. S. Preparing "uncontrollable" retarded children for group instruction. Paper presented at the meeting of the American Educational Research Association, New York, February 1967.

Bloom, R. The contribution of an operant perspective to studying preschool environments. Paper presented at the meeting of the American Psychological Association, Symposium on Approaches to Conceptualization of Preschool Learning Environments, September 1968.

Bobrove, P. Building C-6 token program - attendant manual. Unpublished manuscript, Temple University State Hospital.Unit, November 1967. (a)

Bobrove, P. Guide for patients. Unpublished manuscript, Temple University State Hospital, November 1967. (b)

Bogast, D. M. Operant conditioning and concomitant work behavior in retardates and cerebral palsied persons. Unpublished manuscript, Jewish Vocational Service, Milwaukee.

Brierton, G., Garms, R., & Metzger, R. Practical problems encountered in an aide-administered token reward cottage program. Mental Retardation, 1969, 7(3), 40-43. (Reprint)

Subjects: 28 residents. Ages: 13-63, mean 26. IQ range 40-92, mean 65.
Stimuli: Dixon State School, 1967, large residential institution for mentally retarded. Cottage averaging 20 males.
Responses: Room cleaning, job performance, personal care, getting up on time, and obedience. Criteria for acceptable responses were gradually made more stringent. Responses subdivided into objective components, check lists.
Consequenses: Tokens. Additional target behaviors and rewards instituted during project. BU no delay in meals, go into dayroom, cigarettes, candy, soda, weekly recreation trips, etc.
Procedures: Response costs for not getting up on time, disobedience. For complex responses, individual components at first rewarded singly. Later, only entire response rewarded. By week 7, fixed ratio was established. Behavior had to be performed on 2 successive days. P-1: Baseline period: 4 days for room cleaning, job performance, and salary. P-2: Percentage of Ss performing adequately recorded every day.
Results: P-1: During baseline period, 23% of Ss were cleaning their rooms, 65% performing cottage jobs. Essentially no residents performed personal care responses. P-2: By week 9, more than 80% of Ss were cleaning their rooms, 80% were performing cottage jobs. Over 50% were performing personal care responses. When reinforcement was contingent upon response change, performance dropped appreciatively. Same true whenever a criterion change introduced performance returned to high levels within few days. Drops in most behaviors occurred

during week 5. 3 hr. per day spent in cottage checking performance, distributing tokens, collecting records, compiling data, planning changes and conferences. Improvements in administration of token project: Shift record keeping and token distribution to aide. Aides must know exactly what responses are to be reinforced. Responses varying in environmental changes should be well defined for Ss. Changes should be made gradually. Maintain tighter control on economy to insure token value. Provide many opportunities to spend tokens. Suggestions to improve project should be solicited from aides. Aides should be made aware of Ss' progress. Graphs showing Ss' daily performance would serve this purpose. To bridge gap between 100% reinforcement and intermittent reinforcement, chain reponses, delay reinforcement, and use social reinforcement.

Broden, M., Hall, R. V., Dunlap, A., & Clark, R. Effects of teacher attention and a token reinforcement system in a junior high school special education class. Exceptional Children, 1970, January.

Subjects: 13 junior high school emotionally disturbed students.
Responses: Decreased disruptive behavior and increased study behavior. Measurement device explained in detail.
Consequences: Social reinforcement --T attention -- and points. BU food, privileges, toys, money, grades. Response costs present.
Results: T attention increased study level, but was limited in effects. Reversal demonstrated functional relationship between reinforcing consequences and increase in appropriate behavior. Necessary to institute TO for 1 student to gain participation in point system. Improvements suggested by T: Post point totals daily rather than hourly. Ss should be more involved in establishing point system. Allow class to modify when problems arise.

Brodsky, G. The relation between verbal and non-verbal behavior change. Behaviour Research & Therapy, 1967, 5, 183-191.

Subjects: 2 institutionalized retardates. Females. 17 and 25 yr. old. Highly verbal. Rare social contact. S_1: Behavior modification. S_2: Verbal conditioning.
Stimuli: Playground. Laboratory. Interview. 34 yr. old female mongoloid in lab session (A).
Responses: Social behavior. Interview verbal behavior.
Consequences: Clicks. BU jewelry, candy, toys.
Procedures: P-1: Observation period. Candy given for staying in lab. Interview held daily in lab, 2 hr. after lab session. E asked 15 questions during interview. Each S served as yoked control. P-2: S_1 reinforced in lab session; S_2 reinforced same number of times during lab session but reinforcement noncontingent FI. S_2 reinforced in interview; S_1 received same number of reinforcements during interview session but reinforcement noncontingent FI.
Results: P-1: Observation: Ss spent little time in social behavior on playground, in lab with A. Ss emitted stable low rate of social statements in interview. P-2: For S_1, strong transfer of conditioning effect in lab to interview and playground. For S_2, significant increase in social statements during conditioning in interview but no generalization to lab or playground. Ss's social statements were invalid representatives of actual behavior.
Comments: Fails to support assumption that changes in verbal behavior produce changes in actual behavior.

Brown, D. W. Operant conditioning of attending and verbal imitation of deaf children with deviant behaviors. Dissertation Abstracts, 1968, 28(12-A), 4904-4905.

"The purpose of this study was to investigate the applicability of operant conditioning procedures in increasing attending behavior and speech sound repertoires of deaf children with retarded development. A further objective was to evaluate a method of observing and recording attending and verbal imitative behaviors which would have implications for describing a deaf child's current behavior and for planning remediation of specific deficiencies.

"Procedure. Four children were selected who were enrolled in a residential program for deaf-retardates, exhibited varying degrees of hyperactivity, or inattentiveness, and lacked a functional verbal repertoire. Each child was brought to a laboratory for individual sessions, five days a week, for approximately three months.

"The initial, or baseline, sessions were devoted to assessing the frequency and accuracy of each child's imitation of 37 speech sounds presented by the E, when the only consequent of a correct response by the child was verbal approval from the E. Frequency of attending was also calculated. With two of the Ss, a motor imitation task was added to and, in one phase, substituted for verbal imitation.

"When a record had been obtained, during baseline, of each S's performance in attending and imitating stimuli, reinforcement procedures were instituted. Tokens (chips or marks) were presented to the child contingent upon each correct imitative response; these were exchanged on a ratio basis for a variety of edibles, toys and trinkets. All incorrect responses and behaviors which competed with attending (e.g., staring, turning of head away from E, getting off the chair) were ignored. Changes in dispensing reinforcers were made as needed to gain greater control over the S's behavior. With one S, the effectiveness of the reinforcers was increased by discontinuing the administration of tranquilizers.

"After the attending and imitating behaviors of each S had increased, sessions were conducted during which correct responses were not followed by the delivery of tangible objects or E's verbal approval to ascertain whether extinction of responding would occur. When attending and speech sound imitation declined to a stable rate under extinction, reinforcement procedures were reinstated.

"Results. The tangible reinforcement procedures were effective in systematically increasing amount of attending and verbal imitating in all of the Ss. Only one of the Ss showed an increase in verbal accuracy when E's approval was the sole consequent of a response. And this S's accuracy reached its highest level when tangible reinforcers were added. That the increase in desired behaviors was due to the contingent delivery of reinforcers rather than to other variables in the situation was demonstrated by the marked decrease in attending and accuracy of responding when the reinforcers were withdrawn.

The results of the study suggested that attending was operant behavior and thus subject to modification by manipulation of contingencies; and that verbal approval was a neutral stimulus, or at best, a weak reinforcer for deaf children. Implications for education of deaf children are presented."

Brown, R. A., Pace, Z. S., & Becker, W. C. Treatment of extreme negativism and "autistic" 11 behavior in a six-year old boy. Unpublished manuscript, Bureau of Educational Research, University of Illinois, 1968.

Subject: 6 yr. old boy.
Stimuli: Individual session. Oral reading program. Conversation period. S.R.A. primary reading.
Responses: Reduced negativism, tantrums, bizarre talk; increased functional speech.
Consequences: Marbles. BU orange drink, toys.
Procedures: P-1: Exploratory session. S ignored verbal approaches by T, later responded by screaming, making other negative response. P-2: Baseline of reactions to demands. T made business-like demands, indicated when S was responding correctly or incorrectly. S responded with increased negativism or withdrawal to both praise and criticism. Bizarre speech ignored except during reading when S told such responses incorrect. P-3: Same as P-2, except demands for physical acts enforced in as calm and detached manner as possible. For example, "sit in a chair" followed by picking S off floor and setting him down in chair. This procedure elicited more intense tantrums. Then S held until he stopped. When negativism followed command, next command made after emotional peak of S's response. P-4: Demands and questions. Correct responses reinforced with marbles. Social reinforcement withheld to assess effectiveness of token system. After 20 min. reading lesson, 10-20 min. spent trying to stimulate free conversation while S drinking orange. P-5: Same as P-4 except marble reinforcement schedule changed to VI 30 min. and gradually shifted to VI 60 min. More open ended questions were asked about stories. Praise gradually introduced. After P-5, reading lesson time gradually reduced. Conversation time increased. New T began working with S. Parents trained in behavioral principles.
Results: P-1: Little observed change in behavior. P-2: Behavior similar to P-1. 100% noncompliance to demands, accompanied by negativistic and withdrawal behavior. P-3: By session 7, acts of negativism decreased, S had read some reading materials, answered structured

questions on comprehension. After session 8 which resulted in extreme tantrum in school, S made discrimination that T could follow through on all demands except reading and after this session, verbal negativism and tantrums began decreasing but reading also decreased and was inconsistent while passive negativism and idleness increased. Some attempts at functional speech. P-4: Time on reading lesson about 5 min., but extended to longer periods during latter sessions. In latter sessions, negativistic qualities of passivity and idleness not prominent. Spontaneous speech increased. P-5: S worked on reading lesson full 20 min. in all sessions except one when he was interrupted by intense seizure-like behavior which had also troubled him in P-4. S responded quite readily to praise. In initial sessions, S made relevant statements as long as eight words. In latter sessions, some relevant statements of 15 words or longer. After session 37, no longer any bizarre talk during sessions. No negativism in P-5. When new T began working with S, transfer was made without decrease in performance. Improved behavior extended to home and school. S also in token economy at school, and his performance there increased greatly during P-3, P-4, and P-5. WRAT, March 14: 1.8 reading, 1.0 spelling, 1.1 arithmetic. July 28: 5.1 reading, 5.0 spelling, 2.5 arithmetic. Much improved relations with family.

Bugle, C., Cross, W., & Parsons, R. Token system for ward C-2 east. Paper presented at the seminar of the Rehabilitation Department, Chicago State Hospital, February 1967.

Burchard, J. D. Systematic socialization: A programmed environment for the habilitation of antisocial retardates. Unpublished manuscript, University of North Carolina and Murdoch Center, 1967. Experiment I.

Subjects: 12 mildly retarded delinquent adolescent males (10-20 yr. old). IQs above 50.
Stimuli: Intensive Training Program at Murdoch Center. School and workshop sessions for 2 hr. each day. Attendance at both was voluntary, but was only way to earn tokens.
Responses: Responses could occur only during specified time interval and within designated area to permit analysis of effects of given reinforcer. Target behaviors chosen to provide residents with behavioral repertoire which would produce reinforcement in community environment; Practical skills (personal, social, recreational,educational,and vocational) essential for adequate community adjustment and reducing or eliminating forms of antisocial behavior. Behaviors selected for punishment were fighting, lying, stealing, cheating, physical and verbal assault, temper tantrums, and property damage.
Consequences: Generally CR schedule. Aluminum tokens stamped with number of each S. Value equivalent to 1¢. Number of tokens required for BU reinforcers roughly equivalent to monetary value.BU items and privileges were those available to all residents in institution on infrequent, noncontingentbasis, plus some additional reinforcers. Behavior Credit (BC) System. With 7 behavior credits, Ss could buy reinforcers at regular price, free access to yard, trip to town or 1 hr. recreation time with nonresident girls. With 3, 4, 5, or 6 behavior credits, S had to pay an additional 5 tokens for every item purchased. With 0, 1, or 2 behavior credits, S had to pay an additional 10 tokens for each item. No outside privileges for the latter 2 categories. BU food, smoking articles, grooming articles, books, fishing equipment, recreation activities. Ss could exchange tokens for money to make purchases in town. Timeout: S charged for tokens and required to sit in timeout area. Timeout contingent upon most offenses which could not be ignored but did not involve violence. Appropriate behavior in timeout must have lasted 3-5 min. Seclusion contingent upon highly inappropriate behavior, disruptive behavior in timeout which could not be ignored, or refusal to go to timeout area. S charged 15 tokens for seclusion, remained in seclusion room until quiet for 30 min. If S went to seclusion in orderly fashion and stayed there minimun period of time, reinforced with 5 tokens upon return. To earn maximum number of BCs, S had to pay response cost accumulated during day. Failure to do so resulted in loss of 1 BC. Prices and privileges partially determined by BCs.
Procedures: P-1: Analyzed effect of reinforcers on frequency of 2 specific responses: Sitting at desk during workshop and school. Responses timed on clock. 5 days. Ss received 1 token for every 15 min. of time spent in seats. Maximum that could be earned was 8. P-2: 5 days. Reinforcers distributed noncontingently. Ss received average number of tokens from P-1. P-3: Reinstatement of experimental conditions. 5 days.
Results: P-2: Performance decline was immediate and near 0. P-3 Performance increased to 90, range 58-110 (estimated).
Comments: As' training: 1 wk. of class lecture and discussion, 1 wk. of demonstration and participation in techniques. Informal, inservice training involved individual discussion and biweekly meetings. Article discusses phasing-out material reinforcement for more common social reinforcements and need for programming gradual contingency modification through successive approximation. Social reinforcement programs developed for each resident will be individualized.

Experiment II

Subject: Same as Experiment I.
Stimuli: Same as Experiment I.
Responses: Same as Experiment I.
Consequences: Same as Experiment I.

Procedures: P-1: Analyzed effects of response costs on future probability of antisocial responses. Staff had used time out and seclusion for approximately 1 yr. prior. 7 days. 8 Ss. P-2: Distribution of response costs noncontingently. 7 days. P-3: Reinstatement of experimental conditions. Different reinforcers. 7 days.
Results: P-1: Total number of seclusion and time out responses averaged 28, range 24-31 (estimated). Workshop performance: Mean number of min. 70, range 60-80 (estimated). P-2: Total number of seclusion and time out responses averaged 39, range 28-48 (estimated). Increase in seclusion responses may have prevented occurrence of greater number of time-out responses. Workshop performance: Mean 10, range 7-13 (estimated). P-3: Total number of seclusion and timeout responses averaged 32, range 54-22 (estimated). Workshop performance: Mean 69, range 50-70 (estimated). Table of percentages of tokens spent in each category included; meals, food, smoking articles, and recreation activities highest, ranging from 20.0 to 29.6%

Burchard, J. D. Residential behavior modification programs and the problem of uncontrolled contingencies: A reply to Lachenmeyer. Psychological Record, 1969, 19, 259-261.

Burchard feels that, for the most part, problems Lachenmeyer discussed (Lachenmeyer 1969) are accurate, especially with respect to interpersonal contingencies. However, many of his remarks are drawn from series of isolated incidents revolving around one exceedingly difficult boy and presented in manner that implies frequent or regular occurrences of such incidents. Most relevant concern is solution to problem of uncontrolled contingencies. Burchard finds Lachenmeyer criticisms disappointing in that his "easy solutions" provide few realistic suggestions for programs with limited funds and personnel. Many of problems Lachenmeyer saw had been dealt with shortly after his observations, although they were dealt with in manner often different from his recommendations due to limitations of program. Administration of tokens had been restricted to situations in which contingencies could be monitored and controlled (e.g., workshop, classroom). The more practical suggestions of Lachenmeyer (e.g., specification of target behaviors, contingencies to be applied, on-the-job training, weekly staff meetings) had long since been instituted. Restriction of token systems to structured settings in which contingencies could be controlled does not solve basic question Lachenmeyer raised: Uncontrolled contingencies that determine much of inmate behavior and much attendant behavior toward inmates. Burchard's program constantly tried to improve upon this problem, but he also recognized that many of contingencies were beyond their control and asked how crucial these contingencies are. Question of whether complete control of social contingencies prerequisite to rehabilitation remains open.

Buschell, D., Wrobel, P. A., & McCloskey, N. Some effects of normative reinforcement on classroom study behavior. Unpublished manuscript, Webster College, 1967.

Bushell, D., Wrobel, P. A., & Michaelis, M. L. Applying "group" contingencies to the classroom study behavior of preschool children. Journal of Applied Behavior Analysis, 1968, 1, 55-61.

Subjects: Preschool children. 12 Ss, 10 girls. All had some token system experience.
Stimuli: Classroom situation. 2 regular Ts and 1 Spanish T for 25 min./day.
Responses: Study behavior (e.g., attending to instructions, completing tasks) on individual activities, Spanish lesson, study teams.
Consequences: Colored plastic washers. BU special event (e.g., short movie, trip to park, gym, story), always 30 min. long, outside classroom. Ss not told event beforehand. BU also afternoon snack. Tokens could be accumulated from day to day.
Procedures: Objective: Determine whether operant techniques may be applied to group of individuals with effects similar to those expected with single S. Data collected during 1st 75 min. of class. Ts moved about room giving tokens to Ss who appeared to be actively working. Tokens never mentioned, contingencies not verbalized. P-1: Special event contingent on study behavior. P-2: Special event not contingent. P-3: Same as P-1.
Results: Borrowing, lending (sometimes at interest), hiring of services observed. Theft curtailed by providing aprons with pockets for each S. P-1: Study behavior 67% (average). P-2: 42% low, average about 53%. P-3: Immediate increase to 64%. Average about 74%. Reliability checks showed that effects of various contingencies could be ascertained by direct observation even when automated recording equipment was not practical. Although individual study behavior was more variable than aggregate data, no S displayed more study behavior during P-2 than in P-1 or P-3.

Cantrell, M. L. The power of positive teaching. Instructor, 1969, 78 , 72-78.

Cantrell, R. P., Cantrell, M. L., Huddleston, C. M., & Woolridge, R. L. Contingency contracting with school problems. Journal of Applied Behavior Analysis, 1969, 2, 215-220.

Subjects: 1st - 11th graders.
Stimuli: Classroom. Home.
Responses: "Adaptive" behaviors. Classwork and homework, academic behavior; home reinforcement for some Ss. Non-school phobic behaviors in 1 S.
Consequences: Points. BU preferred activities, money. Reinforcers already present in environment.
Procedures: Contracts: 1. Receipt of reinforcement contingent on adaptive behavior. 2. Behavioral steps programmed sequentially. Many cases fading used, at S's request. Use of "natural contingency managers:" -- parents, teachers. Formulation of contingency contract: 1. Ask: Is it motivation or academic problem? 2. School only, home only or both might be involved. Interviews with Ts provided answers to questions on problem behaviors. No specific study reported; an introduction to the use of contingency contracting.
Results: For 1 S, 6 weeks graph showed grade was same in 3 subjects, 1 letter higher in one and 2 letters higher in another.
Comments: Followup after making out contract and encouragement of parents to continue necessary.

Carlin, A. S., & Armstrong, H. E. Rewarding social responsibility in disturbed children: A group play technique. Psychotherapy: Theory, Research, & Practice, 1968, 5, 169-174.

Drawing from works of Krasner, Fairweather, and Patterson, Es attempted to devise treatment program for four severely disturbed children in children's day care unit. 2 central components: (1) Encouragement of social responsibility (teaching children that behavior of other group members partially their own responsibility), (2) token reinforcement of social participation in natural setting. Treatment program had dual purpose: Modification of boys' disturbed behavior and education of nurses regarding alternative methods in management of disturbed children. Children brought together 4 times/wk., situation structured so that cooperative play encouraged. For sequences of appropriate interaction involving majority of group, token rewards placed in common pool. Sequences of socially inappropriate behavior resulted in fine and tokens withdrawn from pool. BU toys and sweets. Children observed several days before treatment began. On first day of treatment, little or no hitting; space ship was built in record time. Toward end of session one, 1 S caused considerable fine for group. After several suggestions made, children able to engage disruptive S in more constructive behavior and rest of earnings preserved. Soon became apparent that fine system not sufficient to stop all disruptive behaviors. At times child's behavior such that other members of group could not cope with it; became apparent that adult intervention necessary and penalty box instigated. During time child confined to penalty box, none of rewards earned by rest of group went to him. None of his behaviors during that time penalized rest of group. Details of interaction among children given in article. Fining system discontinued when one S began to interact considerably which resulted in exclusion of another S who was not up to their level of social functioning. Once fines discontinued, behavior of group began to improve. Children found to be quite capable of inhibiting aggressive impulses and working together in reasonable harmony. Generalization of decrease in aggression to rest of ward program did not occur immediately. By time program was terminated, reports of ward staff were that such behavior had markedly diminished. Evidence that children generally enjoyed increasingly pleasant interaction. Resulted in downfall of system itself. Interpersonal gratifications came to outweigh benefits of monetary rewards. "This observation flies in the face of criticism that token systems breed 'psychopathy'".

Carlson, C. S., Arnold, C. R., Becker, W. C., & Madsen, C. H. The elimination of tantrum behavior of a child in an elementary classroom. Behaviour Research & Therapy, 1968, 6, 117-119.

Subjects: 8 yr. old Negro girl. Severe tantrums.
Stimuli: Classroom.
Responses: Non-tantrum behavior.
Consequences: P-1: Teacher aide held S in chair when tantrum occurred. S's chair placed in back of room. Treats passed out to other children in room who did not turn around to look. P-2: 1 star for each 1/2 day of non-tantrum behavior. 4 stars in row -- class party, S passed out treats.
Procedures: Non-tantrum behavior reinforced in P-1, P-2.
Results: Tantrum on Day 1 (March 14). None rest of week. 1 tantrum on Days 6 and 9; 3 on Day 10. None during next week. 1 tantrum occurred next week. Three mild tantrums occurred from April 19 - May 2. Then no other tantrums occurred.
Comments: S simultaneously became happier, more social.

Carpenter, P., & Carom, R. Green stamp therapy: Modification of delinquent behavior through food trading stamps. Proceedings of the 76th Annual Convention of the American Psychological Association, 1968, 531-532. (Reprint)

Subjects: Juvenile delinquents. 6 boys. Ages: 10-12 yr.
Stimuli: Free play and discussion.
Responses: Socially appropriate habit patterns. Attendance, promptness, helpfulness, waiting for satisfactions, stopping play promptly, putting toys away, talking during discussion, introducing a problem, explaining why one of Ss had problem, not interrupting, discussing feelings, improvement of school grades.
Consequences: S&H green stamps.
Procedures: Met biweekly for one hr. Half time spend in relatively free play (e.g., pool), half in group discussion. Appropriate behavior reinforced. Some behaviors to be reinforced based on individual problems.
Results: Behavior change obvious immediately after system instituted and maintained for 4 meetings (at which time article written). "Talking about feelings" behavior had evoked little response. Authors say too much introspection required at present.
Comments: Decision not to use punishment made due to aggression aroused by punishment and Ss' overexposure to punishment and underexposure to reward. Possibilities of future research discussed. Es hope to teach responsivity to verbal reinforcement.

Clark, M., Lackowicz, J., & Wolf, M. A pilot basic education program for school dropouts incorporating a token reinforcement system. Behaviour Research & Therapy, 1968, 6, 183-188.

Subjects: 2 groups of 5 girls, dropouts, ages 16-21; matched according to differences between number of years of formal education and scores on Junior High 1 level of California Achievement Test (C.A.T.)
Stimuli: Task materials.
Responses: Correct answers to materials.
Consequences: Points. BU money.
Procedures: Classroom(C) group received basic education program with token reinforcement. Job (J) group received job placement in accordance with usual Neighborhood Youth Corps practices. Classroom group worked on remedial instruction materials 3-1/2 hr. each morning; in afternoon, worked at outside jobs. Plan followed 5 days/wk. for 2 mo. In afternoon job(3 hr.), C-Ss earned regular Neighborhood Youth Corps wage of $1.25/hr. In morning, C-Ss received points for correct answers to materials. Each point equivalent of 1 min. (about 2¢) towards $1.25/hr. For each point over amount needed to earn full credit, C-Ss received bonus of 2¢. Distribution of points determined by time needed to complete lesson, nature of material, criterion of 80% correct. If criterion not met, 1/2 of originally designated points given for corrected errors. As program progressed, distribution of points shifted to increase probability of students' working in areas they needed most practice in. One and often two teachers participated, using commerical materials in content areas, many especially for slow students. Emphasis on math and reading. Initially, materials given to students at level of pre-test achievement.

Results: C-Ss attended approximately 44 days, 1 dropped out after 24. 1 S consistently received bonus points, 2 Ss frequently earned bonus points, and 1 S earned bonus points twice. C-Ss never earned less than $125 of possible $140/wk. On the C.A.T. pre- and post-tests, median increase for classroom group was 1.3 yr.; for job group, .2 yr. Dropout S's increased was .9 yr. Greatest gains for classroom group in mathematics. By changing number of points to be earned by certain materials, possible to modify Ss' choice of materials.

Clement, P. W. Modeling and operant conditioning in child group therapy. Paper presented at the meeting of the American Psychological Association, San Francisco, 1968. (a)

Clement, P. W. Operant conditioning in group psychotherapy with children. The Journal of School Health, 1968, 38(5). (Reprint) (b)

Clement, P. W., Fazzone, R. A., & Goldstein, B. Tangible reinforcers and child group therapy. Journal of the American Academy of Child Psychiatry, 1970.

Clement, P. W., & Milne, D. C. Group play therapy and tangible reinforcers used to modify the behavior of 8 year-old boys. Behaviour Research and Therapy, 1967, 5, 301-312. (a)

Subjects: 11 third grade boys. Mean age 8 yr. 10 mo. Mean IQ 100, rage 80-123. All had formal diagnosis within psychoneurosis of "mild" global severity rating (Fish & Shapiro, 1965).
Stimuli: Group play therapy sessions.
Responses: Social approach behavior.
Consequences: Brass tokens. BU candy, toys.
Procedures: P-1: Token group. P-2: Verbal group. P-3: Control group. VR, VI schedules used throughout. P-1: Each S received about 20 tokens per session. P-2: Same treatment as P-1 except no tokens. Verbal reinforcement. P-3: No therapist, Ss allowed to do as they wished except physically damage other Ss or room. Mothers' guidance groups ran simultaneously. Dependent variables (indexes): Report card grades, anxiety test, observed social adjustment, Q sort, problem behaviors test. Time-sampling observations through mirror.
Results: P-1: Improved on statements to Ss, social play, proximity, problem behaviors test. P-2: Improved on statements to T, proximity and got worse on social play. P-3: No change. Fewer statements to T, more statements to Ss were considered good. 9 of 11 mothers listed positive changes in Ss after training; 1 said her son's stealing had gotten worse but he had improved in school.
Comments: Mean score per S for P-3 generally higher throughout than for P-1 and P-2. This is not accounted for.

Clement, P. W., & Milne, D. C. Group play therapy and tangible reinforcers used to modify the behavior of 8-year-old boys. Proceedings of the 75th Annual Convention of the American Psychological Association, 1967, 2, 241-242. (b)

Cohen, H. L. Case II: Thirty delinquent boys are living 24 hours a day in a token economy. Unpublished manuscript, National Training School for Boys, Washington, D. C., 1967. (a)

Cohen, H. Educational therapy. Arena: Architectural Association Journal, 1967, March. (b)

Cohen, H. L. Motivationally oriented designs for an ecology of learning. Paper presented at the meeting of the American Educational Research Association, Symposium on Application of Reinforcement Principles to Education, New York, February 17, 1967. (c)

Subjects: 28 juvenile offenders. Ages 14-18. Crimes include homicide, rape, armed robbery, house breaking, auto theft. Racial and state regional balance. All school failures, 85% dropouts, 15% retarded from 3-6 yr. in achievement (SAT).
Stimuli: February 1966-February 1967 (ongoing). National Training School for Boys, Washington, D. C. Existing cottage on prison grounds. 24 hr. learning environment. 140 programmed educational courses, 18 programmed classes. 80% of all subject matter was individualized programmed instruction, 20% programmed classes.
Responses: Increased academic behaviors. Preparation within 1 yr. for return to former public school systems. 90% performance on tests. Recorded by time clocks throughout building.
Consequences: Point economy using money as generalized reinforcer. Group reinforcement by calling attention to 100% performance. BU parole based on new evaluation methods. Room, food, clothing, gifts, private offices, entrance fee and tuition for classes. Each point equalled 1¢. After success in educational area, S could take material to his private bedroom. Relief conditions for Ss not having sufficient funds.
Procedures: Academic performance reinforced.
Results: No S on relief more than 2 weeks. Improved test performance.
Comments: CASE II-M.O.D.E.L. (Contingencies Applicable to Special Education--Motivationally Oriented Designs for an Ecology of Learning). Both this report and Cohen et. al. (1967) report are productive source of definitions of motivating environment and theory of systems of reinforcement.

Cohen, H. L. Educational therapy: The design of learning environments. Research in Psychotherapy, 1968, 3.

Cohen, H., Filipczak, J., & Bis, J. Case I: An initial study of contingencies applicable to special education. Silver Springs, Md.: Educational Facility Press -- Institute for Behavioral Research , 1967. (Also, ERIC ED 27663).

Cohen, H. L., Filipczak, J., Bis, J., Cohen, J., Goldiamond, I., & Larkin, P. Case II-M.O.D.E.L.: A contingency-oriented twenty-four hour learning environment in a juvenile correctional institution. Silver Springs, Md.: Education Facility Press--Institute for Behavioral Research, 1968.

Cohen, H. L., Goldiamond, I., & Filipczak, J. Maintaining increased education for teenagers in a controlled environment: Case II-M.O.D.E.L. project. Paper presented at the meeting of the American Orthopsychiatric Association, Washington, D. C., March 20-23, 1967.

Subjects: Delinquents, 85% school drop-outs. 28 Ss. Ages: 14-18 yr. Unresponsive to Training School educational system. Crimes included homicide, rape, armed robbery, general theft. 15% still in school ranged from 3-6 yr. retardation (as measured by Stanford Achievement Test).
Stimuli: National Training School Cottage.
Responses: Educational behaviors in controlled setting. 140 programmed courses available, starting at 20 hr./week, increasing to 24, 32, 40, and then even during evenings. Entrance tests in subject areas. Achievement in academic program. Social behaviors toward each other, staff, visitors. Examinations, minimum passing grade 90%. Otherwise repeat unit. Time-punch cards in and out of activity areas.
Consequences: Points regarded as if were money. BU private sleeping room, own meals in cafeteria, own clothing, pictures and furnishings from rooms, air transportation home, use of lounge, purchase from store, entrance into course.
Procedures: Sleep, eat, and dress as other inmates. Revised Beta averaged 93.8, range 76-112. Median SAT score 6.3. Average Gates Reading Survey 6.45.
Results: 20 Ss never went on relief, longest stay among others was 2 wk. Revised Beta IQ given after 9 mo. showed an average increase of 12.09 points, range -5 to +27. SAT after 90 hr. of academic work, +1.89 academic mo. Gates Reading Survey +27 academic mo.
Comments: "Ss are not working for money per se, but . . . money provides the S means to engage in a variety of behaviors, . . . the opportunity to behave is one of the most powerful reinforcers known." (Premack)

Cohen, H. L., Goldiamond, I., Filipczak, J., & Pooley, R. A brief description of two research projects in special education. Unpublished paper written for CTI, Institute for Behavioral Research, Washington, D. C., January 1967.

Cohen, H. L., Goldiamond, I., Filipczak, J., & Pooley, R. Training professionals in procedures for the establishment of educational environments. Silver Spring, Md.: Educational Facility Press -- Institute for Behavioral Research, 1968.

A report of training session based on CASE I and CASE II--M.O.D.E.L. projects at National Training Schools for Boys. CASE I used reinforcements normally operating in nonacademic environments as response contingencies to increase educational performance. CASE also worked with correctional officers and teachers assigned to weekly sessions which provided feedback and prepared staff for more extensive project. CASE II--M.O.D.E.L. is subsequent 24 hr. program discussed in Cohen, et. al. (1967) and Cohen (1967). Aim: To produce curriculum and educational technology applicable to other educationally and culturally deficient adolescent populations. Report includes training in following areas: General considerations, behavioral requirements for trainees, theoretical principles, practical method to effect principles. 4 sections: Experimental analysis of behavior and its extensions to problems of social relevance; environmental design and its extension as problem solving approach; general procedures used in CASE as synthesis of operant and environmental design procedures; and concepts, specific procedures, solutions, and problems of CASE project, (setting up point systems, assigning points, educational programs and procedures, parole systems, role of officers).

Colman, A. D., & Boren, J. J. An information system for measuring patient behavior and its use by staff. Journal of Applied Behavior Analysis, 1969, 2, 207-214.

Comtois, D. R. Behavior modification program. Unpublished manuscript. Mount Pleasant State Home and Training School, Hospital Improvement Project (HIP), 1967.

Crosson, J. E. A technique for programming sheltered workshop environments for training severely retarded workers. American Journal of Mental Deficiency, 1969, 73, 814-818. Experiment I.

Subjects: 7 severely retarded males. 16-34 yr. old.
Stimuli: Task materials.
Responses: Operate drill press to make wooden pencil holders. Use hammer to assemble flower boxes. Approximately 100 operants per task.
Consequences: Counter. BU candy.
Procedures: T demonstrated each operant in sequence. S modeled. S received CR for each operant until response came under control of appropriate task stimulus. Reinforcement then terminated for that response. Reinforcement eventually became contingent upon completion of entire chain. Criterion: 2 errorless trials.
Results: Ss performed task accurately and reliably with less than 3 hr. training. "Procedures relatively efficient."

Crosson, J. E. A technique for programming sheltered workshop environments for training severely retarded workers. American Journal of Mental Deficiency, 1969, 73, 814-818. Experiment II.

Subjects: 6 severely retarded males. 16-34 yr. old (same group as Experiment I).
Stimuli: Task materials.
Responses: Operate drill press to make wooden pencil holders. Use hammer to assemble flower boxes. Approximately 100 operants per task.
Consequences: None. Reinforcement was given for learning each operant during training in Experiment I. No training involved in Experiment II.
Procedures: Ss received no practice after Experiment I. Presented with stimulus. Expected to perform entire chain at criterion level.
Results: 2 mo. followup: 99% discriminations intact. Average 1 trial to regain criterion level. 12 mo. followup: mid-90's or higher discrimination intact. Average 4 trials to regain criterion level.

Crosson, J. E., & Dejung, J. E. The experimental analysis of vocational behavior in severely retarded males. Unpublished manuscript, University of Oregon, Eugene, Ore., February 1967. (Also, ERIC ED 16339).

Curren, J. P., Jorud, S., & Whitman, N. Evolution and evaluation of a treatment program on a closed psychiatric unit. Unpublished manuscript, Anoka State Hospital, Anoka, Minn., 1967.

Drabman, R. Behavior modification in the classroom: A critical review. Paper presented to a seminar in behavior modification, State University of New York at Stony Brook, Fall 1968-69.

Dyer, V. An example: Reinforcement principles in a classroom for emotionally disturbed children. Exceptional Children, 1968, 34, 597-599.

Subjects: Bright 12 yr. old girl. Extreme shyness, difficulty with peer relations, did not complete school work. In special education class.
Stimuli: Classroom. Subject matter materials.
Responses: Attempting and then completing work; later only correct answers.
Consequences: P-1: Tokens. BU not stated. P-2: Candy only.
Procedures: S had responded adequately to tokens in previous class when target was social behavior. P-1: S received token for increasing approximations to target behavior. P-2: Candy deprivation, received only contingently.
Results: P-1: Little observable success during 2-1/2 mo. on tokens. P-2: Behavior improved within 10 days. Number of subjects completed increased from less than 1 to more than 3. Time limit decreased from 2 hr. per subject to 1 hr. for 3 subjects. In 2 mo., S reached 5 subjects daily, all at grade level plus one outside report a week.

Ebner, M. Summary of Edgefield Lodge. Unpublished manuscript, Edgefield Lodge, Troutdale, Ore., 1967. (a)

Ebner, M. Token program at Edgefield Lodge. Unpublished manuscript, Edgefield Lodge, Troutdale, Ore., 1967. (b)

Edwards, K. A. Personalized instruction in a small liberal arts college. Paper presented at the meeting of the Midwestern Psychological Association, Chicago, May 8-10, 1969.

Ellsworth, J. R. A token economy system innovated and conducted by non-professional hospital personnel - Roseburg V.A. Hospital, Oregon. Paper presented at the meeting of the Department of Institutions and University of Washington, November 1967.

Fielding, L. T. Guidelines for operant conditioning. Paper presented at Hastings State State Hospital to the Humane Practices Committee, March 15, 1967.

Fineman, K. R. An operant conditioning program in a juvenile detention facility. Psychological Reports, 1968, 22 (3, Pt. 2), 1119-1120.

Subjects: Highly anxious, neurotic, psychotic, homosexual children. 20 Ss. Ages: 12-18 yrs. Average stay in this treatment-oriented detention facility: 2.5 wk.
Stimuli: San Fernando Valley Juvenile Hall Intensive Care Unit.
Responses: Appropriate behavior including self control, participation in group activities.
Consequences: "Plus" merit points. Ss were told what behavior earned which point. Ranking from high to low was displayed each morning. Unit's program distinguished by immediacy of reinforcement. Negative consequences for seriously inappropriate behavior--immediate isolation. Minus points for other inappropriate behavior, e.g., acting out, profanity, fighting.
Results: No quantitiative results available. Subjective evaluations from deputy probation officers: Praise for ease of group control, attenuation of previous amount of profanity and aggression, augmentation in group participation. Ss worked for points even though BU rewards were infrequent. Social reinforcement from counselors and peers for merit ladder each morning seemed adequate.
Comments: Two hopes: Counselor would take on secondary reinforcing properties and bulk of points would be plus.

Fitzhugh, K., & Zimmerman, J. Self-care development and vocational habilitation. Unpublished manuscript, New Castle State Hospital, Indiana, 1968.

Forehand, R., Mulhern, T. J., & Rickard, H. C. The effects of a token economy in a therapeutic camp. Unpublished manuscript, University of Alabama, 1967.

Galloway, C. Modification of a response bias through differential amount of reinforcement. Journal of the Experimental Analysis of Behavior, 1967, 10, 375-382.

Galloway, C., & Petre, R. D. An analysis of the functional equivalence of stimulus class members. Journal of Experimental Child Psychology, 1968, 6, 384-390.

Garms, R., & Brierton, G. A token reinforcement project with retardates. Unpublished manuscript, Dixon State School, December 8, 1967.

Subjects: 28 male retardates.
Stimuli: Dixon State School, cottage environment.
Responses: Self-help behaviors (making bed, hanging up clothes).
Consequences: Tokens spent on consumables (candy, pop, cigarettes) and opportunities to engage in reinforcing behaviors (go outside, go to poolroom).
Procedures: Checklist used to determine preproject behaviors. Percent of Ss performing behaviors averaged to establish baseline. Criterion used to judge behavior as adequate for reward was gradually made more stringent. List of behaviors reinforced, tokens paid, reinforcers available through token purchase, and token price of these reinforcers given. Clean room responses and personal care responses chained in 2nd and 4th weeks respectively. Intermittent reinforcement established in 7th week. Lowering of wage ceiling necessary in 7th week due to large number of tokens being accumulated. More reinforcers were brought under token control. Fines administered for several undesirable behaviors.
Results: Token-reinforced behaviors increased in frequency. Percent of residents performing room and personal care behaviors reached level well above preproject baselines even though more difficult criteria gradually introduced. Job performance did not show such large improvement, possible due to fact that Ss were already responding at high level as result of ongoing reward system. Rising criterion caused quality of this response to improve somewhat. Behaviors followed by token fines showed marked decrease. Withdrawal of reinforcement resulted in rapid drop to baseline for room cleaning, not for job performance, again possibly due to ongoing reinforcement contingencies set by aides. Introduction of intermittent reinforcement resulted in immediate short term drops, but previous high performance levels were quickly regained. Steps taken before introduction of token system: A. Staff orientation meetings held to emphasize basis of system and get suggestions as to specific behaviors desired, possible reinforcers used, problems anticipated. Initial increase in duties of aides should be balanced by reduction in work as system begins to operate smoothly. B. Practical matters (e.g., bank, token supply, checklists) considered. Checklists should list criterion responses. Ss highly interested in "state of their finances", so bank should make everyone's supply visible. C. Administrative problems solved. Avoid changes in staff. Insure that tokens are major means of gaining reinforcement. Set up economy so tokens remain at premium. One way to control this would be to make reinforcement for added behaviors contingent on performing minimal behaviors. New opportunities to spend should be added as project progresses. Ss'performance should be recorded daily, partly because obvious changes in behavior make aides aware of Ss' capabilities.
Comments: Long term project should be to prepare Ss for normal environment, shifting tokens to social reinforcers. Suggestions for this switch are given.

Golub, C. M. The influence of various demographic variables on the participation of V. A. Day Treatment Center patients in a token economy, Fort Snelling, Minn., 1969.

Golub, H. P., & Golub, C. M. Token economy handbook for patients. Unpublished manuscript, Psychology Service, V. A. Day Treatment Center, Minn., May 1968. (a)

Golub, H. P,, & Golub, C. M. Token economy handbook for staff. Unpublished manuscript, Psychology Service, V. A. Day Treatment Center, Minn., May 1968. (b)

Graebner, O. E. Token reinforcement at Azalea and Begonia, girl's rehabilitation cottages. Unpublished manuscript, Austin State School, Austin, Tex., 1967.

Gray, B. B., & Fygetakis, L. The development of language as a function of programmed conditioning. Behaviour Research & Therapy, 1968, 6, 455-460. Experiment I.

Subjects: 4 ½ yr. old male linguistically divergent child. Marked deficiency in expressive use of function class verbs. Used fractional sentences. Demonstrated sufficient number of content words, was able to generate 3 word constructions although not at phrase structure level. Exhibited deficient or different language learning rather than merely retarded normal development.
Stimuli: Presentation of content and function words.
Responses: Spontaneously generate correct and appropriate constructions within a given corpus of contents and function words, i.e., response generalization. From this point, S should be able to incorporate new content and function words into corpus without specific conditioning. During spontaneous language, use of "is". Also on use of "is...ing". Rate determined by dividing number of actual correct usages by number of opportunities.
Consequences: Tokens. BU not specified.
Procedures: For discussion of programmed conditioning procedures, see Gray and Fygetakis (1968). Specific situation used to elicit target response and is never presented in same way again. Further, great variety of stimuli used to elicit target response so child has opportunity to experience great number and variety of stimulus situations which form single response class. Percentages and graphs shown for experiment.
Results: Successful in certain situations in bridging gap between specific target responses and response generalization. Response generalization may occur at 2 levels: Procedures must enable S to generalize target response to different but appropriate language situations and S must be able to incorporate target response in new construction that is both correct and appropriate. Carry-over into spontaneous language was achieved in 7 hr.

Gray, B. B., & Fygetakis, L. The development of language as a function of programmed conditioning. Behaviour Research & Therapy, 1968, 6, 455-460. Experiment II.

Subjects: 6 Ss in 2 groups; 2 boys (4, 7 yr.), 3 boys (4, 5 yr.), and 1 girl (4 yr.). Linguistically divergent children.
Stimuli: Presentation of function words.
Responses: Use of appropriate constructions during spontaneous language.
Consequences: Tokens. BU not specified.
Procedures: Sequence of programmed conditioning procedures for function words similar to Experiment I, but carried out in group situations.
Results: Successful in certain situations in bridging gap between specific target responses and response generalization. Response generalization may occur at 2 levels: Procedures must enable S to generalize target response to different but appropriate language situations and S must be able to incorporate target response in new construction that is both correct and appropriate.

Gray, B. B., & Fygetakis, L. Mediated language acquisition for dysphasic children. Behaviour Research & Therapy, 1968, 6, 263-280.

Subjects: 5 boys, 1 girl. Ages: Range 4.0 - 6.1 yr., mean 4.8. Dysphasic-child: Normal intellectual potential, evidences significant lack in linguistic performance resulting from neurological causes. Range of expressive language age 2.0 to 5.3 yrs., mean 3.7. Language characterized by fractional sentences, lack of function words.
Stimuli: Programmed materials. 5 mornings/wk.
Responses: Correct responses during programmed conditioning, appropriate to playground.
Consequences: Verbal social approval. Styrofoam tokens in star shape. Stars stored in cups, 15 per cup. At end of wk., each child turned in full cup for toy. Verbal approval given randomly and frequently for any desired behavior and/or language performance. Varied according to program. Time sequence: Continuous reinforcement, 50% ratio of reinforcement, intermittent reinforcement, and social reinforcement only. BU inexpensive toys priced in terms of desirability. Loss of stars for inappropriate behavior but never for an error during programmed conditioning. For severe behavior problems, time out for 5 min. Option to return or remain for an additional 5 min. period.
Procedures: P-1: Baseline. During 4 opportunities for spontaneous language, base rates were taken on frequency of occurrence of linguistic unit which was to be programmed at some later time and for linguistic units which had already been conditioned and program terminated. P-2: Target behavior reinforced.
Results: All performance graphs showed improvement in language development. All Ss sat quietly and worked attentively for periods of up to 50 min. Hyperactivity and distractibility came down well into normal range. Time out was seldom needed or used, then with only 1 of Ss. After 1st wk., all Ss were able to delay reinforcement until end of wk.

Mean percentages of correct responses on most efficient and least efficient programmed conditioning in procedures were 80-100, with average of about 92, and 30-70, with average of about 50, respectively.
Comments: Detailed account of curriculum materials. If vertical progression through program is stopped by child's errors, T should undertake logical and sequential modification of these 8 variables: Complexity, model R&S modes, schedule, response, stimulus, reinforcement. Technical discussion of this activity given.

Green, R. L., & Stachnik, T. J. Money, motivation and academic achievement. Phi Delta Kappan, 1968, December, 228-230.

A short layman-article providing summary of token economies used in variety of settings and recommending consideration of: 1) The all or none model of college scholarship could be improved upon by having a scaled-increment system in which magnitude of reinforcement would be commensurate with achievement. 2) Payment should always be contingent upon performance. 3) Rewards should be delivered as soon as possible; exchange could occur at later time. 4) Initially reinforcement should be delivered for approximations to desired behavior. Skills produced by monetary reward system would gradually generate consequences necessary to maintain them--praise, status, a good job. "What must be emphasized is the difficulty a young person has in obtaining these forms of reward then he possesses few of the achievement behaviors required to generate them." (p. 230)

Grosicki, J. P. Effect of operant conditioning on modification of incontinence in neuropsychiatric geriatric patients. Nursing Research, 1968, 17, 304-311.

Guess, D. A functional analysis of receptive language and productive speech: Acquisition of the plural morpheme. Journal of Applied Behavior Analysis, 1969, 2, 55-64.

Subjects: 2 mentally retarded Ss. Did not have "plural" concept and could, but did not, articulate plural phonemes.
Responses: Verbal behavior. Responses in receptive auditory training for plural acquisition.
Consequences: Chips. BU sweets ,small toys.
Results: Data indicated that Ss'receptive comphrehension was functionally independent of expressive speech in grammatically productive acquisition of plural morpheme. P-1: Both Ss learned to make receptive auditory discrimination between singular and plural words. This auditory discrimination of singular and plural words, even though grammatically generative, did not generalize to productive speech of either S as measured by probes (unreinforced probes measuring expressive use of singulars and plurals were interspersed within receptive training). P-2: In expressive plural training, Ss correctly learned to add plural phonemes to labels when shown pair of identical objects. P-3: Es wondered if generalization would occur from reversed receptive plural training to productive speech now that verbal repertoires of Ss included use of regular plural words as grammatically generative class. Instead, each continued correctly using singulars and plurals in unreinforced expressive probes, while at same time they were receptively reversing their pointing response in answer to singular and plural labels from E. Study suggests that receptive language and expressive speech can be 2 separate and functional independent classes of behavior. Several important questions which could not be answered within present research design also discussed.

Guess, D., Sailor, W., Rutherford, G., & Baer, D. M. An experimental analysis of linguistic development: The productive use of the plural morpheme. Journal of Applied Behavior Analysis, 1969, 1, 297-306.

Guyett, I. Behavior modification using resocialization and token economy for the rehabilitation of chronic schizophrenic patients - Dixmont State Hospital. Paper presented at the Quarterly Meeting of State Psychologists of Western Pennsylvania.

Hamblin, R. L. Structured exchanges and childhood learning: Hyperaggressive children. Report #1 (draft), May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo. Experiment I.

Subjects: Five 4 yr. old boys who had not responded to amphetamine therapy.
Responses: Cooperative behavior.
Consequences: Tokens. BU movies, toys, snacks, etc.
Procedures: P-1: Baseline. Teacher used "typical" training to cope with Ss' behavior. Teacher inadvertently reinforced aggressive behavior by (1) always capitulating in any fight and (2) attending aggression by looking, scolding, and even striking back. P-2: T ignored aggressive behavior and at same time engaged other Ss in activity which could be reinforced by tokens. T coached by wireless communication system at first. P-3: Instead of letting free equilibrium obtain, Es prematurely restructured exchange system so aggression would be punished. Cooperation reinforced but T charged tokens for aggression. P-4: T ignored aggressive behavior and reinforced cooperation. P-5: Baseline. Token exchange removed; T automatically returned to old pattern. P-6: Same as P-4.
Results: P-1: Frequency of aggression increased until after 8th day, when average was 160 sequences per day (s.p.d.). P-2: Cooperation increased from 56 to 115 s.p.d.; aggression decreased from 160 s.p.d. to 60 s.p.d. P-3: Aggression 100 s.p.d., cooperation remained same. Es hypothesized that attention given by T in levying fines reinforced aggression. P-4: Aggression, about 60 s.p.d., cooperation 140 s.p.d. P-5: Aggression, 138 s.p.d.; cooperation averaged 124 s.p.d. P-6: Aggression, ultimately 7 s.p.d.; cooperation averaged 181 s.p.d. Es gave average for "normal" nursery school as 15 s.p.d. for aggression; 60 s.p.d. for cooperation.
Comments: In P-1, average attendance at lessons about 8% of available time. After wireless coaching system implemented, lesson attendance increased gradually to about 75% at end of P-4. During P-5, attendance decreased to 23% but rose to 93% in P-6.

Hamblin, R. L. Structured exchanges and childhood learning: Hyperaggressive children. Report #1 (draft), May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo. Experiment II.

Subjects: 4 primary grade boys.
Responses: Decreased class disruptions; increased usage of study time.
Consequences: Tokens. Stars. BU candy bar, recess, swimming, dessert, toys, etc.
Procedures: P-1: Ss each evaluated on academic performance (points: 1-100), following instructions, and kindness to other Ss. At end of day, each S with high enough score and completed stars received candy. One mo. duration: Evident that Ss would disrupt until T gave them opportunity to do academic work for reward of teacher attention. P-2: Study behavior reinforced by tokens. P-3: Baseline. Tokens removed. P-4: Same as P-1.
Results: Long term experience: Ss found they could earn tokens by behaving well and feigning work. Semi-continuous token exchange used to maintain good behavior and delayed point exchange for completing assignments correctly. Points and tokens equivalent in value. Impossible to earn as many tokens for behaving while executing task as points for doing task correctly. Because too many tokens were being lost or stolen, teachers began counting tokens 3-4 times daily. Ss enjoyed seeing their bar-charts grow; competition between Ss stimulated work. Best BU were big long term rewards but Ss could not sustain effort without being able to buy smaller items along the way. Therefore, sweets, games, special privileges, and free art and reading periods made available. With these minor changes, token exchange successful all yr. P-1: Disruptions increased from 30 per 40 min. period (p.p.) to 75 p.p. 55% of available study time used. P-2: Disruptions 25-30 p.p.; study time 85%. P-4: Study time 96-97%; disruptions 10 p.p.
Comments: 2 new Ss entered after 2 mo. Each learned system and was working within a few days.

Hamblin, R. L. Structured exchanges and childhood learning: Hyper-aggressive children. Report #1 (draft), May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo. Experiment III.

Subjects: 4 Ss in intermediate grades.
Responses: Decrease disruptions; increase study.
Consequences: Token exchange system. BU recess, swimming, privilege to buy ice cream at lunch, etc.
Procedures: P-1: Baseline. Ts ran class as usual. Ts failed to reward study behavior and rewarded disruptive behavior by attention, although Ts generally gave up and terminated latter exchange. P-2: Tokens reinforced studying; could be traded for BU. Disruptions ignored, or if possible, S put into TO room. P-3: Baseline. Ts returned to old habits but much of improvement of P-2 maintained. P-4: Same as P-2. Overall: 2 new Ss introduced after 2-1/2 and 3 mo. respectively. They caused periodic disruptions and feigning of work by all Ss resulting in cyclical system of turmoil and work. Ts, due to relief, overpaid Ss when they worked, so Ss able to earn enough for more desirable purchases. Solution: Periodic token exchange for good behavior and delayed point exchange for work correctly done. Some disruptive behavior persisted. Several other innovations tried; most successful: Money allowance which allowed tokens to be traded for 20¢ a day (max.) or $1.00/wk. Es faced with spending more on BU at school or having parents structure exchanges at home. Latter measure chosen; parents reinforced Ss contingent on school performance. Reinforcers were going for motorcycle ride, fishing, etc.
Results: P-1: By days 15-17, Ss were studying 28% of time; averaging 66 disruptions per 1/2 hr. period (p.p.). P-2: By days 21-23, study 83%; disruptions 11 p.p. P-3:

Ss averaged 47 disruptions p.p.; studied 70%. P-4: Disruptions averaged 10 p.p.; study time averaged 90-95%. Overall: Combination of continuous token and point exchanges at school with delayed exchanges at home dramatically transformed Ss' behavior in many settings. Ss' median increase in reading, 1.75 levels; in arithmetic, 1.35 levels.
Comments: Dramatic results from April-June, in spite of the problems encountered in January-March. Two case studies presented, one of which used response costs.

Hamblin, R. L., & Buckholdt, D. Structured exchanges and childhood learning: Ghetto children. Report #2 (draft), May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo. Experiment I.

Subjects: 10 Ss in classroom of 33 Negro remedial 1st grade students.
Responses: Use of available study time.
Consequences: Tokens
Procedures: P-1: Data taken during 1/2 hr./day on 11 Ss taught by assistant T specially trained by CEMREL. T assigned work and gave individual help for 10 of 30 min. For rest of 30 min., Ss and classmates left alone, first with assistant T absent, then with both Ts gone. E and O used special recording device to measure time children worked on 3 kinds of assignments during the 10 min. periods.
Results: Ss worked about 75% of available time when Ts present. When assistant gone, dropped to 55-65%, and when both Ts gone, to less than 50%. Good T can handle only 10 students on continuous token exchange, but experiment showed that delayed exchange where rewards given only for work correctly done can be used in classroom. These Ss represented top 1/3 of class. Middle 1/3 had started token economy with other T at same time as Ss, and results were similar Group judged lowest in academic ability did not respond to delayed token exchange. They went through motions of working but did not learn.

Hamblin, R. L., & Buckholdt, D. Structured exchanges and childhood learning: Ghetto children. Report # 2 (draft), May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo. Experiment II.

(Report on an experiment by M. M. Wolf, 1969, abstracted elsewhere in bibliography).

Hamblin, R. L., Buckholdt, D. Structured exchanges and childhood learning: Ghetto children. Report # 2 (draft), May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo. Experiment III.

Subjects: 7 nonverbal Ss.
Responses: Develop pattern of talking with non-family.
Procedures: In pre-school class of 22 Negro Ss, Ts ignored aggressive-disruptive behavior and rewarded attention and cooperation with social approval and plastic tokens later exchanged for milk, cookies, movies, toys, etc. Within 3 wk., most Ss participated cooperatively in lessons. Focus then placed on 7 Ss who were progressing far below normal. P-1: Baseline. At end of phase, 3 of 7 Ss had dropped out of school for reasons unrelated to school performance. P-2: Experimental. T elicited talking in various ways. Receipt of tokens and approval contingent upon verbal communication. P-3: Baseline. New T took over Ss; rate of talking dropped immediately, then gradually increased to about 23%. P-4: Experimental. New T reintroduced token exchange. P-5: Baseline. Token exchange removed, new T put in.
Results: P-1: 4 Ss said something in about 8% of 15-sec. observation periods. P-2: Verbalization percentages increased gradually to about 48%. P-4: Talking increased rapidly to about 60%. P-5: Talking dropped only to 47%; equilibrium continued to obtain. Higher than 40% median rate for other children in class, and 42% median rate for upper middle class children in University lab school. Overall: Qualitative changes which occurred in 4 Ss were: Use of increasingly long verbalizations, increased talking at home, more outgoing behavior at home. Experiment is example of lasting change in behavior produced by token exchange, due to fact that once talking pattern is established, culture will reinforce.

Hamblin, R. L., & Buckholdt, D. Structured exchanges and childhood learning: Ghetto children. Report #2 (draft), May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo. Experiment IV.

Subjects: 8 Ss for whom token economy in Experiment I unsuccessful.
Responses: Increase task performance.
Consequences: Increased power of exchange.
Procedures: E increased value of reward and immediacy of reciprocation. E worked for 6 wk. with groups of 4 Ss on immediate food exchange. 2 20-min. sessions daily during which children given simple directions and reinforced for appropriate responses or, if they could not respond, for imitating correct response of another S or E. Material gradually increased in difficulty until S almost completed kindergarten level. Then, to teach Ss to read, exchange used in which Ss received tutoring from advanced children. Ss divided into groups A and B; group C recruited from another class. Everyday each peer tutor (T) and S would go to small room away from classroom to work uninterruptedly without supervision for 20 min. on sound-symbol relationships. Language master audio device used. O tested S at end of each session. Experiment terminated for each pair after 20 days or after all 33 sounds learned. For A, both S and T rewarded according to S's progress. Both could earn 6 tokens if S remembered all sounds learned in previous session, and both could earn 2 tokens for each new sound identified. Each day S learned 2 new sounds, both S and T earned special prize (sweets). For B, Ss and Ts received 8 tokens at beginning of each session regardless of progress. C Ss and Ts received no rewards. O gave S and T approval for progress.
Results: Medians of sounds identified at end of 20 days were: A - 33, B - 23, C - 13.5. Peer tutoring itself had powerful effect.

Hamblin, R. L., & Buckholdt, D. Structured exchanges and childhood learning: Ghetto children. Report #2 (draft), May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo. Experiment V.

Subjects: Further data on previous experiments given regarding changes in Ss' habits, attitudes, reading readiness scores and IQ. One S particularly impressive changes: Condition clinically diagnosed as moderate if not severe autism; tremendous fear of adults, practically mute, virtually unteachable. In December, S became part of group of 8 remedial first grade Ss who received special work. S remained behind other children although he progressed somewhat. In February, Es instigated new approach.
Responses: Respond promptly to questions from teacher.
Procedures: P-1: Twice daily, T displayed 8-10 M&Ms in hand. S received M&M if he promptly and correctly verbalized color of M&M; otherwise, replaced in can. P-2: M&Ms exchanged for prompt naming of familiar objects. P-3: S reinforced with praise and tokens when Ts saw him talking with other children, when he responded to questions in class or initiated conversation with T. In addition, during 2 15-min. periods each day, T taught S how to tell story. S rewarded with praise, tokens, and M&Ms for about every 20 sec. of story talk.
Results: P-1: By 5th session, S responded quickly enough to earn all candy; continued to do so for remaining 5 sessions. P-2: Within 10 days, S responded freely and consistently. However, still lacked ability to talk freely in syntax; refused to talk to classmates. P-3: Story talk increased from 15 to 30 sec. to 2 min. by 2nd wk. By end of 3rd wk., S reached maximum of 6 min. without interruption. Overall: Before speech therapy begun, S scored 21 points out of 58 on test of skills preliminary to reading success. After therapy, 57. S's IQ increased from 57 (fall) to 131 (spring).

Hamblin, R. L., Buckholdt, D., Bushell, D., Ellis, D., & Ferritor, D. Changing the game from "get the teacher" to "learn". Transaction, 1969, 6, 20-31.

Layman-oriented article summarizing results of 18 mo. of using exchange token systems with different types of problem children: Extraordinarily aggressive boys who had not responded previously to therapy; 2 yr. olds who learned to read about as fast as well as 5 yr. olds ; 4 ghetto children, too shy and withdrawn to talk who became better than average talkers; several autistic children who were either mute or could only parrot sounds who developed functional speech, lost bizarre and disruptive behavior patterns, and exhibited improved relations with parents and other children; normal children. More detailed explanation of some of these experiments can be read elsewhere in this bibliography.

Hamblin, R. L., Ferritor, D., Blackwell, L. J., & Kozloff, M. A. Structured exchange and childhood learning: The severely retarded child. Report # 3, May 1, 1969, Central Midwestern Regional Educational Laboratory (CEMREL), St. Ann, Mo.

Subjects: Autistic children who came to CEMREL Laboratories. 18 Ss. 6 echolalic, 5 near mutes, 7 mute.
Stimuli: Laboratory environment.
Responses: Successive approximations to normal habit patterns.
Consequences: Food as soon as possible; food exchange supplemented by token exchange. Social and bodily contact. Immediate reinforcement. BU, in stage 7 when more difficult tasks introduced, M&M candies sometimes used; play outside; listening to music; playing with ball; playdough; painting.
Procedures: Timeout for bizarre behaviors which could not be ignored. With 1 S a shock stick was used. S was conditioned after 2 instances, 1 later instance. Exchange procedures--7 stages: 1) Eliminate gaze aversion via counter exchange. Eliminate bizarre and/or aggressive behavior via extinction. Train parents in exchange, conditioning, structuring of exchanges, timeout and ignoring. 2) Establish motor imitation, attention, simple discrimination skills by food exchange for working puzzles. Imitation of therapist. 3) Establish vocalization response pattern. 4) Eliminate negativism via counter exchange, establish verbal imitation. Continue 1. 5) Establish various verbal behaviors using a food exchange. Establish token exchange to supplement, within 4-6 wk. 6) Classroom -- 3 and 4 Ss with therapist. Continue 5. Establish free play outside within 6-7 mo. 7) Establish social behaviors, play indoors, instruction following, and academic behaviors. Continue 5.

Results: Out of 15 children who had been in therapy long enough to evaluate, all had made substantial progress. Table of ratings on friendliness, speech, autistic seclusion, and illicit attention-earning behavior for all Ss given (p. 80a).
Comments: Authors suggest autisim is "functional, that autistic children have peculiar learning disorders which result in their rather severe retardation." (p.1). Account of research done in autism given. Authors put forth their theory that autistic child learns to play the games "get mother's attention," "help me, I'm stupid," "look at me, I'm bizarre." Authors provide references to support their comments on various theories of autism. They say some operant conditioners ignore social interaction of autistic child with his parents, that in reducing autism to simplistic one-way relationship between responses and reinforcement, operant conditioners do not mention parents' inappropriate reinforcement of their child's autistic behavior patterns; unless reinforcement of appropriate behavior is consistent and continually reinforced, it will not become part of child's repertoire. Authors are concerned with lack of emphasis in operant conditioning on social exchange between parent and child. "Since the operant conditioners focus on the one-way relationships between a specific response and specific reinforcers, i.e. since they consider neither the exchanges nor the pervasive structures of the exchanges in the family, they are unable to see that the development of an autistic child represents socialization itself." (p. 19). In training patterns, one-way wireless communication system is used. When procedures of Laboratory are transferred home, sometimes necessary for therapist to be present and occasionally use portable transceiver to instruct parents.

Haring, N. G.,& Hauck, M. A. Improved learning conditions in the establishment of reading skills with disabled readers. Exceptional Children, 1969, 35, 342-352.

Subjects: 4 boys. Severe reading disabilities. Grades 5, 4, 4, 3. Average or above intelligence.
Stimuli: Programmed reading, P-1 - P-5. Regular reading, P-6.
Responses: Written responses to materials. Oral responses to questions. Oral reading. 20 pen event recorder - oral responses, teacher communication. Counter-written responses.
Consequences: Points, marbles, BU edibles, trinkets, store items.
Procedures: 4 days adaptation. P-1: Baseline, no answer confirmation. P-2: Baseline, immediate answer confirmation. P-3: Counters introduced. P-4: Counter numbers functioned as points with exchange value. CR. P-5: VR, marbles worth 10 points from manipulandum. P-6: Points for oral reading of and answers to questions, silent preparation and oral reading of regular classroom materials. Teacher direction of oral reading. Teacher communication almost totally preplanned.
Results: Average total responses per period: P-1: 115-180. P-2: 94-228 (1 S scored 335. Misused answers). P-3: 221-337. P-4: 267-334. P-5: 209-316. Overall changes in reading level after 5 mo.: 1-5 yr. - 4 yr.
Comments: Cites basic studies. Tokens most powerful because appropriate to changing conditions of deprivation. Expensive reinforcers in P-4 not effective. Accounts for VR being less than CR response rates.

Haring, N. G., & Lovitt, T. C. Operant methodology and educational technology in special education. In N. G. Haring and R. Schiefelbusch (Eds.), Methods in special education. New York: McGraw-Hill, 1967.

Explains how operant procedures provide teachers with scientific, reliable method for analyzing behavior of children in special education. Focus is on child's responses, description of responses, effects on child's environment. Response defined as "overt change in child's behavior". Behavior affects environment because it is followed by environmental event; it operates on environment and for this reason is called operant behavior. When environmental events or consequences of behavior increase frequency of behavior, consequences are called reinforcing. Positive reinforcers: Stimuli which increase frequency of response are added to a situation. Negative reinforcers may also increase frequency of response, but by their removal from the situation. Punishment, a special case of presentation of aversive consequences or withholding rewarding consequences, is not considered in chapter. Its complex effects upon behavior may generalize beyond either teachers' expectation or control, a fact to which clinical research and everyday experience attest. While not difficult in application, operant methodology is nonetheless exacting in its requirements. Both precise definition and measurement of response occurrences are fundamental to behavioral analysis. Operant level or frequency of occurrence of behavior prior to specific application of consequences is baseline, an initial measurement upon which modification decisions are made. Reinstatement of preconsequence procedures (reversal or control) will determine whether or not behavior modification consequence actually functions as decelerating reinforcer. Once control of function and process has been demonstrated, teacher may

reinstate consequence. Procedure of measurement of baseline, modification, control-reversal, and reinstatement is known as functional analysis of behavior.

Extensive review of operant conditioning studies with exceptional children includes: (1) Preschool children -- culturally deprived, autistic, children in special classroom. Social reinforcement, high probability behaviors, reinforcement, tokens used in combination with high probability behaviors as reinforcers, time out are discussed. (2) Elementary school children -- educable mentally retarded, trainable mentally retarded, neurologically impaired. Point (token) economy with BU trinkets, candy, money, contingency system are discussed. (3) Secondary school children -- high school students, potential dropouts. High probability behaviors as reinforcers, points negotiable for high probability behavior are discussed.

Detailed discussion of operant methodology includes: (1) Analysis of baseline recurrent behavior, (2) arrangement of environmental consequences or contingency system, (3) establishment of behavioral goals or terminal behaviors. Special emphasis on instructional methods encompassing 1) Contingencies and programming of behavioral goals, 2) components of a behavioral unit (stimulus, response, reinforcement contingency, and consequences), 3) educational targets of self-realization and economic efficiency, 4) definition of topographies of academic behavior and 5) behavioral objectives. Three components of preparing instructional objectives: (1) identify terminal behavior by name, (2) define desired behavior by describing condition under which behavior is to occur, (3) specify criterion of acceptable performance by describing acceptable level of performance. Other instructional methods discussed are continuous programming of the environment (control, measurement, evaluation), individualization of programming, programmed instruction, and programmed testing.

Hartman, K. B. Experiment on Ward 108. SK&F Psychiatric Reporter, 1968, 41, 9-11.

Henderson, J. D. Conditioning techniques in a community-based residential treatment facility for emotionally disturbed men. Paper presented at the meeting of the Eastern Psychological Association, Washington, D. C., 1968. (Also, unpublished manuscript, Spruce House, Horizon House, Inc., Philadelphia, 1968).

Paper discusses techniques used in work habituation training, social adjustment training, and counter-symptom conditioning within community based token economy (Spruce House). This facility has been discussed elsewhere in this bibliography, most recent data being given in Henderson, Kelley, Hibbert, & Samuels (September, 1969). In present paper, increases in work performance and social performance under contingent reinforcement demonstrated and illustrative case material, including data resulting from counter-symptomatic program, given. Tables include partial listing of job titles, pay rates, and bonuses; social activities and maximum grickle payments for rewarded behavior; Spruce House program activities for 1 S on 2 selected days; summary of status of Ss originally from state hospital and general hospital backgrounds after 11 mo. of experiment. Token economy shown to be effective way of producing or maintaining desired social and work behaviors. Residents of Spruce House seldom idle; majority of those remaining in facility 1 mo. or longer showed clinical improvement. Some Ss became socially and vocationally competent without being free of delusions, hallucinations, or other pathognomic behavior. Extent to which behavior acquired within Spruce House transferred to community not yet known. Operant program permitted extensive treatment since it yielded relatively objective records of operations performed and their effects. These data permit more responsible treatment decisions than ever possible through clinical impressions. Further advantages of program: May be effectively conducted for 20 residents with only 2-3 service staff members on shift. Operating cost per patient per day about 3 times that reported by state hospitals, about 1/2 that reported by general hospitals in same city. (From paper summary).

Henderson, J. D. The use of dual reinforcement in an intensive treatment system. In R. D. Rubin & C. M. Franks (Eds.), Advances in Behavior Therapy, New York: Academic Press, 1969. Also, unpublished manuscript, Spruce House, Horizon House, Inc., Philadelphia, 1968. (a)

Paper discusses intensive dual reinforcement program for psychotic men living in Spruce House (described elsewhere in this bibliography). Program provided for continuous monitoring and token reinforcement of undesired and desired behaviors 6 hr./day, 5 days/wk. Preliminary results indicated program successful in producing suppression of acting out and psychotic behaviors and in augmenting symptom-displacing "normal" behaviors. Effects of reinforcement limit, inter-reinforcement intervals, and rate of reinforcement examined.(From paper summary).

Henderson, J. D. Coexisting with the community. Paper presented at the meeting of the American Psychological Association, Washington, D. C., August 31, 1969. (b)

Discusses coexistence of psychotic men with neighborhood, families, social agencies. Ss were 18-55 yr. old, living in treatment facility (Spruce House) in center city residential neighborhood. Experiences described in paper produced these observations: (1) Mental health facility located in community desirable; some neighborhoods more hospitable than others. "Hospitality" should be confirmed or contrived through community relations work before facility located there. Also, zoning status should be firmly established, by adjudication, if necessary. (2) If operant program is to be successful in restoring patients to community, large part of therapeutic resources must be devoted to work with involved community agencies and significant family members. Bridging programs are as important to community adjustment as symptom-removing program, work habituation, or socialization. (3) Effective treatment can occur in community-based operant environment despite multiple obstructions as described in this paper and others (Hibbert and Henderson, 1969; Samuels and Henderson, 1969: Scoles and Henderson, 1968).(From paper summary).

Henderson, J. D., & Kelley, K. M. Spruce House: A community-based operant environment. Unpublished manuscript, Horizon House, Inc., Philadelphia, January 15, 1969.

Subjects: Manageable male psychotics. 18-55 yr. old. Ss randomly assigned to Spruce House or control facility.
Stimuli: Social, vocational, instructional specially designed programs including Social Adjustment Laboratory.
Responses: Performance of individual job assignments. Social interaction in film and discussion activities, card club, house meeting, role playing, crafts, games, singing, etc. Responses on programmed materials. Responses on specially designed programs individually determined.
Consequences: Social responses of staff and other patients. Psychotic behavior ignored. Candy, cigarettes for some Ss. "Grickles" (tokens). BU meal extras, candy, passes, phone calls, special privileges.
Procedures: Four level payment plan devised to maintain work behavior while learning consequences. Daily and weekly bonuses encouraged persistence. FR on programmed materials. Ss functioned alternately as pupil and teacher. Teacher paid FI and bonuses based on exam scores of students. Token reinforcement suspended on social performance for 10 wk. with 7 Ss. Tokens then reinstated.
Results: Data shows improved performance in vocational and social programs. Suspension of token reinforcement resulted in decline in social performance. Reinstitution of reinforcement increased not only social behavior, but also other target behaviors. Data from Social Adjustment Laboratory indicated that intensive dual reinforcement system can be powerful. Contingent token reinforcement in Social Adjustment Laboratory decreased acting out and psychotic behaviors and increased "normal" behavior. At end of 18 mo. project, 48% of experimental Ss working in community compared to 36% control. 61% experimental Ss in community, working or not, 45% control. Programs operated for as many as 20 Ss by only 2 or 3 staff members per shift; possible because of detailed objective specification of almost all activities, system of cross checks which minimizes staff error, and employment of residents for non-program and program functions.

Henderson, J. D., Kelley, K. M., Hibbert, R. F., & Samuels, J. S. A community-based operant learning environment. Papers presented at the meeting of the Association for Advancement of Behavior Therapy, Washington, D. C., September, 1969.

Four papers discuss Spruce House, Horizon House, Inc. in Philadelphia: (1) Community-based rehabilitation facility for psychotic men described. Objectives, strategies, tactics for implementation using operant learning techniques, and advantages of locating operant environment in community discussed. Desired behavior changes produced; graduates of operant facility functioned as well or better than persons discharged from traditional control facilities. (2) Systems for conditioning fundamental symptom-displacing responses, conditioning complex social and work-related behaviors, and for bridging acquired adaptive habits from operant learning environment to community discussed. Procedures for observing, recording, and reinforcing behavior and insuring accurate implementation of programs described. Especially valuable: Use of continuously recorded performance data as feedback information upon which to base alteration or modification of treatment regimes and reinforcement schedules; emphasis on removal of pathognomic behaviors. (3) Data resulting from two intensive conditioning programs which provided for systematic observation of symptomatic and symptom-displacing behaviors of psychotic men presented. Data used to adjust reinforcement schedules and monitor progress of shaping. Data resulting from special literacy program and program to promote work habituation presented. (4) Results given for subjects treated in experimental community-based operant learning environment and control subjects assigned to large state hospitals and psychiatric wards of short term city hospitals. Duration of initial hospitalization, rehospitalization, community tenure and employment are among variables cited. Methods of subject selection, procedures and follow-up recommendations presented. Operant environment seems to out perform other facilities on many community adjustment variables. Operant and city facilities tend to out perform state hospitals on all variables studied.(From paper abstract). Advantages of community based operant environment: (1) Location in and orientation to community creates expectation for residents that they have not been eternally banished to isolating institution, but will rejoin community. (2) Denial of identification of residents as "ill" encourages initiative in changing behavior and creates atmosphere which implies responsibility for one's own behavior. (3) Behavioral observations, which continue throughout resident's waking hours and expressed quantitatively, yield information about functioning vastly superior to clinical observation. Information may be fed back to residents and contribute to behavior change. (4) Behavioral inventorying through time permits manipulation of stimulus contingencies and evaluation of consequent behavior change or lack of change. (5) Incentive system employing tokens permits free variation of primary reinforcers so that resident may be rewarded with stimuli which are reinforcing to him. Contingent reinforcement produces observable behavior changes. (6) Intensive observation, recording contingent reinforcement, and sensitive scheduling techniques permit evaluation of effectiveness and efficiency of technical operation. (7) Graduates of behavioral environment seem to function at least as well, and in many ways better, than graduates of control facilities (Samuels & Henderson, 1969). (From paper summary). Motivational system is token economy; "grickle" is basic unit of exchange. Grickle is awarded by making entry on resident's Program Card. Chits (tickets) used to provide immediate tangible reinforcement for symptom-displacing responses specified in treatment regimes individually tailored for each subject. Chits must be converted to grickles to establish buying power. Grickles may be exchanged for primary reinforcers, such as food extras and tobacco, or for privileges such as phone calls, passes, or excursions into community. Recording all expenditures on Program Card permits daily monitoring of reinforcers preferred by individuals. Manipulation of grickle exchange rate and reinforcement contingencies provides maximum motivation and numberous opportunities for pairing card and social reinforcement with primary reinforcement. Bridging Card issued daily to residents employed outside facility. Grickle

reinforcement awarded for satisfactory grooming and punctuality. When possible to enlist employer's cooperation, Bridging Card used to award grickle reinforcement for adequate work performance and satisfactory relationships with co-workers. Program and Bridging Cards for recording and reinforcing behavior. Provide detailed daily record of activities in which resident has participated, indicate adequacy of performance. Cards also permit cross checking of other daily and weekly records. Two logs submitted for each program activity conducted. Number of occurrences of symptom-displacing and symptomatic behavior and of any token or social reinforcement recorded on Behavior Log. Output data or number of ballots received for contribution to success of recreational activity recorded on Production Log. Data recorded on Behavior and Production Logs and Program and Bridging Cards collated nightly and transcribed to Weekly Summary. Removal of pathognomic behavior and substitution of fundamental symptom-displacing responses emphasized in two intensive treatment programs, Interpersonal Relations Laboratory and Intensive Workshop. These are explained in detail. Symptom-displacing responses stabilized in IRL and Intensive Workshop maintained on intermittent reinforcement schedules in general work, instructional, and recreational programs. Latter three programs and bridging system explained in detail. All data and anecdotal materials reviewed weekly in order to reassign, promote, and reprogram residents. Responsibility of maintenance of Spruce House, with exception of major repairs, assumed by residents assigned to general work program. Program implementation handled by "counselors".

Henderson, J. D., & Scoles, P. E., Jr. A community-based behavioral milieu for psychotic men. Unpublished manuscript, Spruce House, Philadelphia, 1968.

Herskovets, B. The effects of adult verbal approval for approval-satiated subjects following pairing with extrinsic reinforcers. Dissertation Abstracts, 1967, 28 (3-B), 1227-1228.

"This research was designed to investigate the influence of adult verbal approval on the responses of "approval satiated" children. The measure of this influence was taken immediately after the adult's verbal approval for the subjects was paired with certain extrinsic reinforcers. The pairing treatment occurred immediately after evidence of "approved satiation"was established.

"By means of a session during which the adult experimenter was highly approving, the subjects were brought to a condition of approval satiation, measured by the decrease in the frequency of certain verbal responses upon which the adult verbal approval was contingent. Each subject was then immediately assigned to one of six groups for experimental treatment.

"For one group, designated Group 1a, treatment consisted of pairing plastic trinkets with adult verbal approval for correct responses on a treatment task. For Group 1b the responses were reinforced only with trinkets. Correct responses of Group 2a were reinforced with adult verbal approval paired with a white light serving as a token for later redemption. For Group 2b these responses were reinforced only by presentation of the white light. The correct responses of subjects in Group 3a received the adult verbal approval not paired with extrinsic reinforcers, while these responses of Group 3b received neither verbal approval nor extrinsic reinforcement.

"On a criterion task administered immediately following the treatment session, the same class of responses of all subjects was continuously reinforced by the adult's verbal approval. The frequency of the responses to the criterion was compared to the base rate established just prior to the treatment session.

"Statistical analysis indicated a significant relationship between the pairing of adult verbal approval for satiated subjects with the extrinsic reinforcers, and the performance of these subjects on a task, with the adult's verbal approval contingent, administered immediately following the pairing treatment.

"The results were discussed in terms of establishing and maintaining a conditioned reinforcer as a function of its pairing with another positive reinforcer. Evidence of a further decrement in response frequency following additional adult verbal approval not paired with extrinsic reinforcers was observed. The possible enhancement of the reinforcing effects of adult verbal approval when it accompanies the termination of aversive conditions was also discussed.

"Effects of sex and IQ score of subjects were not found to be significant."

Hewett, F. M. Educational engineering with emotionally disturbed children. Exceptional Children, 1967, 33, 459-467.

Subjects: Emotionally disturbed, elementary students.

Hewett presents his "Learning Triangle": Task ("clearcut stimulus leading to appropriate response"), reward (positive reinforcement controlling response rate), structure (withholding of positive reinforcement or administration of negative reinforcement following inappropriate responses, scheduling positive reinforcement, setting of contingency for receipt of reinforcement). Hierarchy of educational tasks discussed: Attention, response, order, exploratory, social, mastery, achievement levels.

Engineered classrooms described in terms of physical environment, schedule. Individual work record cards. Reinforcement FR every 15 min. Time rather than task contingency used because it standardized total number of possible check marks in single day, reduced competition, was useful in alerting student to work, compatible with efficiency orientation of classroom. Intermittent schedules may be more powerful, but in author's experience, not as manageable and practical for T. Hierarchy of interventions to maintain student role explained. 9 levels (1 for each level of hierarchy of educational tasks plus TO and exclusion).

Results: Design has been developed and observed in 4 public school systems and a hospital setting (1965-1967). Preliminary observation suggests that changes in work efficiency and adaptive behavior occur quickly. Despite requirements for teacher aide, well organized classroom, and use of tangible rewards, appears to be feasible design for use in public schools. Frequent criticisms and some problems in application are discussed. Information found in this article is essentially a summary of Hewett's book, Emotionally disturbed child in the classroom.

Hewett, F. M. The emotionally disturbed child in the classroom. Boston: Allyn & Bacon, 1968.

Describes general educational strategies that have been used with emotionally disturbed children--psychodynamic-intrapersonal, sensory-neurological, behavior modification-- in terms of the goals and methodology for each. Hewett proposes developmental sequence of educational goals which reflects stages of development described in work of Havighurst, Piaget, Sigmund Freud, Erikson, Maslow, and others. Hewett's sequence is composed of seven ascending levels: Attention, response, order, exploratory, social, mastery, and achievement. The methodology of teaching emotionally disturbed children is described in terms of the learning triangle: Task, reward, structure. Hewett's plan for an engineered classroom includes floor plan of classroom; check-mark system (words are used sparingly, T or A explains why S receives or does not receive the possible ten check marks); conditioning with candy to make check-marks meaningful; exchanges (back-up reinforcers are candy) interventions when S cannot function in school (send student to study booth, modify assignment, restructure verbally, send to exploratory center, send to order center, take student outside classroom and agree on task, provide individual tutoring and increase check marks, time-out, exclusion). The Santa Monica project, Santa Monica Public Schools, California, is explained in detail. For this project, the engineered class schedule was divided into four main periods: Order, reading and written language, arithmetic and exploratory. School lasted from 8:30 a.m. to 12:30 p.m. Check marks could be received nine times during the morning. Six Ts, eight As, and 54 educationally handicapped Ss were selected for the project. Three tests were given to help determine success: Reading vocabulary and reading comprehension (CAT), arithmetic fundamentals (CAT), and reading and spelling (WRAT). Three questions asked: (1) What is effect of rigid adherence to engineered classroom design and use of token and tangible reward system on educationally handicapped children who previously have been in a regular class? (2) What is effect of rigid adherence to engineered classroom design in use of a token and tangible reward system on educationally handicapped children who previously have been in a small individualized class which did not use such a reward system? (3) What will be effect of abruptly withdrawn completely engineered classroom design including a reward system in a class of educationally handicapped children who have become accustomed to it?

Major dependent variable utilized in Santa Monica classes was task attention. Two Os sat in front of each of six classrooms for 2-1/2 hr . every morning during entire year of project. Children were observed for five minute segments throughout observation period in random order; at least five separate examples of task attention were obtained on each student each day. At no point in project was agreement below 85%. Daily individual task attention percentages were obtained for each child; total observed task attention time was divided by total observed time.

Eight intervals in all, fall and spring semesters: Class E -- Experimental in fall, experimental in spring. Class C -- Control in fall, control in spring. Classes CE -- Control in fall, experimental in spring. Classes EC -- Experimental in fall, control in spring. E improved significantly more than C in arithmetic fundamentals over the year. Task attention -- C greater than E during interval I, C fell slightly below E during interval II, E dramatically increased at beginning of interval III and leveled off for the remainder of project. At beginning of interval III, C dropped rapidly, improved during interval IV, but fell 3-13 percentage points below E from interval II on. This data provides answer to question 1. CE made a significant gain over C during spring semester in arithmetic fundamentals. Task attention -- CE made significant gains in task

attention over spring semester. C achieved significantly higher task attention level than CE during interval I. This narrowed during intervals II and III, but reappeared in interval IV. CE attained significantly higher level during the remainder of the semester. This data provides answer to question 2. Achievement test gains in EC and E were not significantly affected. Task attention -- EC and E were not significantly different during intervals I and II, E attained significantly higher task attention percentage during intervals III and IV. This was maintained during intervals V and VI, but there was no significant difference for intervals VII and VIII. E made significantly higher gain in task attention than EC over the spring semester. During intervals I and II, EC significantly higher in task attention than CE. There was no significant difference in interval III, but one favoring EC occurred again during interval IV. Over the spring semester, CE and EC attained quite similar task attention percentages and no significant differences were found. This data provides answer to question 3.
T in classroom C was particularly interested in engineered classroom approach and sought to implement as much of it as possible while adhering to control condition, which excluded use of check-mark system. Possibility of Ts in E and EC becoming secondary social reinforcers by previous pairing with tokens should be considered.

Hewett, F. M., Taylor, Artuso, et. al. The Santa Monica project: Evaluation of an engineered classroom design with emotionally disturbed children. Exceptional Children, 1969, 35, 523-529.

Engineered classroom briefly described. Subjects were 54 emotionally disturbed elementary children.

Ss assigned to 6 project classrooms with 9 students in each. With exception of 5 children, all students were 2 or more yr. below expected grade level in reading and all but 7 were 2 or more yr. below in arithmetic fundamentals. 6 female elementary school teachers. 2 wk. training program for teachers and aides. Experimental conditions of project involved rigid adherence to engineered classroom design and systematic reliance on giving of check marks. Control condition consisted of any approach T chose to follow, including aspects of engineered design except use of tangible or token rewards. Conventional grading, verbal praise, complimentary written comments on completed assignments, awarding privileges for good work were all acceptable. Detailed results can be read in Hewett (1968). Major findings: Task attention of students significantly facilitated by experimental condition when that condition was introduced following placement in either regular or control condition class. Task attention also facilitated by removal of experimental condition from classes which had become accustomed to it over one semester. Reading achievement not significantly affected by either experimental or control condition, but gains in arithmetic fundamentals were significantly correlated with presence of experimental condition. Facilitating effects on task attention seen as related to emphasis in engineered design on building "attention", "response", and "order" behaviors. Correlation between arithmetic improvement and presence of experimental condition also probably reflection of emphasis on "attention", "response", "order" behaviors. Building of these basic learning components may more immediately and directly apply to arithmetic than language arts subjects such as reading. Perhaps most interesting and somewhat surprising finding was that classes starting out on experimental and ending in control condition actually improved in task attention following removal of experimental condition. This change apparently not just due to time alone or novelty effects because of length of project; more logical explanation is increased effectiveness of Ts in classes to function as secondary social reinforcers due to their semester-long association with success-oriented approach using primary reward system and investment made in building competencies at "attention", "response", and "order" levels during experimental condition. This readied students for participation in teacher centered, more traditional educational program utilizing "exploratory", "social", and "mastery" level tasks and rewards. Appears that use of tangible rewards on temporary basis may be extremely useful in launching children with behavior and learning problems into successful learning at school.

Hingtgen, J. N., & Coulter, S. K. Auditory control of operant behavior in mute autistic children. Perceptual & Motor Skills, 1967, 25, 561-565.

Subjects: 4 mute autistic children: 3 boys, 1 girls. 5 yr., 9 mo. - 8 yr., 3 mo.
Stimuli: Auditory stimuli.
Responses: Lever-pressing during S^D. 5 pairs of auditory stimuli: P-1: Music (S^D) vs. silence (S^Δ). P-2: Story vs. silence. P-3: Story vs. music. P-4: Crayon vs. shoe. P-5: Mommy vs. apple. Criterion for learning: When no. of errors fell below total no. of changes from S^D to S^Δ multiplied by fixed-ratio value. P-3, 3 consecutive sessions at criterion level. P-4 & P-5, words repeated at 1 sec. intervals for 1 min. period of presentation. Conditions reversed after discrimination learned. P-3, P-4, P-5, 10 sec. prediscrimination period of silence preceded S^D or S^Δ. 10 sec. of no responding required. Correct and incorrect responses recorded on lever. Automatic individual counters, cumulative recorders.
Consequences: Coins. Coin vendor. Fixed-ratio based on individual performance. BU food from food vendor. M&Ms, crackers, sugar coated cereal.
Procedures: Ss were deprived of meal preceding session. S alone in room presented with auditory stimuli via loudspeaker. During presentation of S^D, lever-pressing reinforced. No reinforcement during S^Δ. Food vendor operable during S^D and S^Δ. 40 min. Each min. designated S^D or S^Δ, random schedule, no more than 3 consecutive min.
Results: 3 of 4 Ss learned 4 steps of S^Ds. 4th S did not demonstrate any learning--brain damaged, probably hearing loss. P-3, P-4, P-5, prediscrimination period demonstrated retention of discrimination. Table of S^D and S^Δ mean response rates during 1st and final sessions is given for each S.

Hirsch, I. S. Training mothers in groups as reinforcement therapists for their own children. Dissertation Abstracts, 1968, 28(11-B), 4756.

"Recent psychological literature includes many reports of success in modifying deviant human behavior by the use of the principles of reinforcement originally derived in animal laboratories. These principles have been taught to non-professionals such as hospital attendants and parents in order for them to learn how to modify the deviant behavior of those for whom they are responsible, for example, hospital patients and children. There has been only one reported study in which parents in groups have been taught reinforcement principles to use in changing the deviant behavior of their own children. The purposes of the present investigation was to teach parents and thus extend this work, and evaluate the effects of the educational treatment.

"The subjects were 30 mothers, primarily from professional families, each of whom had a child that was considered "disturbed" by either the parents, or more frequently, by a mental health professional. Each subject deposited $50, returnable upon perfect attendance at all the meetings involved in the program. They were assigned to a No Wait Group (N = 15) which began treatment immediately, and a Wait Group (N = 15) which began treatment when the No Wait Group finished. Each of these two groups was assigned to a Large Group of ten Ss, and a Small Group of five Ss. All groups received the same treatment, though the method of presentation different somewhat between the Large and Small Groups. The groups meetings consisted of lectures dealing

with the principles of behavior modification and discussion of practical problems that the Ss were encountering. The Ss were asked to apply what they learned to their home, and to complete other homework assignments. The group meetings lasted for nine (one and one-half hour) sessions over a five-week period. Each S was tested on three occasions.

"The measures of outcome used to assess change due to treatment were: The Depression and Anxiety (Welsh) Scales of the MMPI; The Depression and Anxiety Scales of the Lorr-Daston Mood Scales; the Present vs. Ideal Rating Scales; The Behavior and Achievement Rating Scale; and the Behavioral Vignettes. Additional tests used were the Henmon-Nelson Test of Mental Ability, Scoring Sheets based on home observation, and a Parent Questionnaire.

"The results show that the Behavioral Vignettes, a measure of how well the Ss learned the presented material, showed a highly significant degree of improvement directly related to treatment. The Ss' records of behavior in the home exhibited that their children's behavior was modified in the desired direction, and the Ss subjectively reported on the Parent Questionnaire that they strongly benefited from the program, their children's and their own behavior changing considerably due to treatment. The Anxiety and Depression Scales of the MMPI decreased significantly, but part of this improvement occurred during the waiting periods, though the change in the sample scores were greater after treatment. The Ss' Anxiety and Depression scores were greater after treatment. The Ss' Anxiety and Depression Scores on The Lorr-Daston Mood Scale decreased significantly as a function of treatment, but both increased during the follow-up period. The scores on the Present vs. Ideal Ratings and the Behavior and Achievement Ratings. Both showed improvement whether or not the Ss had been treated, were waiting for treatment, or were being followed up five weeks after treatment. IQ scores showed no systematic relationship with change over the course of treatment for any of the seven dependent variables. The size of the group also did not seem to differentially affect treatment outcome."

Holzschuh, R. D. Teaching teachers, parents, children and self in the use of behavior management principles. Paper submitted to be read at the meeting of the American Psychological Association, September, 1967.

Hunt, J. G., Fitzhugh, L. C., & Fitzhugh, K. B. An attempt to teach "exit-ward" patients appropriate personal appearance behaviors on the job by using reinforcement techniques. Technical Report No. 2, August 1967, New Castle State Hospital, New Castle, Ind.

Hunt, J. G., Fitzhugh, L. C., & Fitzhugh, K. B. Teaching "exit-ward" patients appropriate personal appearance behaviors by using reinforcement techniques. American Journal of Mental Deficiency, 1968, 73, 41-45.

Hunt, J. G., & Zimmerman, J. Stimulating productivity in a simulated sheltered workshop setting. American Journal of Mental Deficiency, 1969, 74, 43-49.

Subjects: 14 exit-ward patients. 6 males, 8 females. 25-53 yr., mean - 38 yr. Mean IQ 75, range 50-99. Institutionalized average 15 yr., range 6 mo. - 36 yr.
Stimuli: Telephone scratch pad materials.
Responses: Report for work. Remain on job. Proper dress. Grooming. Counting task in production of pads recorded.
Consequences: Initially tokens, then script. BU ability to pay rent, bus, beauty shop, recreation with script. Store items during tokens and script. Bank, deductions, and "payday" to simulate real world.
Procedures: P-1: Baseline, Ss counted minimum of 1 hr. each. P-2: Ss counted for each of 2 hr. separated by 15 min. coffee break. Work produced during 1 hr. lead to bonus, no bonus in adjacent hr. Each S had own baseline number of pads counted, above which bonus granted. P-3: Baseline. Criterion: 75± 2 pages per pad.
Results: Group productivity: (Estimated). P-1: 14.6-15.3. P-2: Bonus hr.: 17.6-22.2, non-bonus hr.: 17.5-20.5. P-3: 20.2-23.4. Productivity in 3 of 4 P-3 hrs. was equal to or less than lowest value in 4 final P-2 hrs. P-3 23.4 value inflated by idiosyncratic increase in work output of 1 S.
Comments: Systematically presented instructions could have influenced productivity.

Johnson, E. E. et. al. Regional Evaluation and Research Center for Head Start. Annual Report, November 1967, Southern University. (Also, ERIC ED 20792).

Kale, R. J., Zlutnick, S., & Hopkins, B. L. Patient contributions to a therapeutic environment. Michigan Mental Health Research Bulletin, Kalamazoo State Hospital, 1968.

Karraker, R. J. Student conducted token reinforcement systems. Paper presented at the meeting of the American Psychological Association, San Francisco, September 1968.

Reports results of graduate level class requiring students to execute two behavior modification projects: Self project and one on another individual or group. Students "skim read" several articles on behavior modification to obtain preliminary information regarding nature of self, individual, and group behavior modification projects. At end of 3 wk. class, students indicated behaviors to modify for course. 38 students involved. Study behaviors most frequently chosen (44.8%) for self-projects. 42.8% of individual projects were on study behaviors. 52% of full time teachers implemented token reinforcement systems in public school classrooms. Most frequent target of token systems was out of seat behaviors. Author felt it was significant that 52% of full time teachers elected to implement group token systems instead of individual projects. Author felt this observation may support "well known conclusion" that it is difficult to get teachers to individualize instruction. Discussion of various consequences employed, direction of behavioral change (acceleration vs. deceleration), temporal contingency, use of control procedures, and ratings of project effectiveness by students.

Knowles, P. L., Prutsman, T. D., & Raduege, V. Behavior modification of simple hyperkinetic behavior and letter discrimination in a hyperactive child. Journal of School Psychology, 1968, 6, 157-160.

Subjects: 7 yr. and 8 mo. old boy. Repeating 1st grade. Increasing frequency of hyperaction behavior. Serious reversals in printing.
Stimuli: Special class. One day weekly.
Responses: Walk down hall to special class, sit quietly at desk after entering tutorial room. P-5: Correct printing of letters.
Consequences: P-1 - P-4: Candy. P-5: Hashmarks on board. BU candy.
Procedures: Utilizes T as experimenter in classroom. Ts given freedom to choose (1) Ss, (2) target behavior, (3) experimental design. Psychologists functioned as consultants. This is case study. Special school T and intern (A). P-1: T, A, and S walked down hall from candy store, S sat down, reinforced. T asked S why he received candy. S responded appropriately. S's mother began to use candy to increase desired behaviors at home. P-2: S performed appropriately and was reinforced. P-3, P-4: Same as P-2. P-5: Correct printing responses reinforced at end of class. FR.
Results: S improved in behavior enough to be returned to school after P-5. Improvement in walking and sitting, after 3 and 6 wk., with one exception which was easily corrected. S's mother reported no reversals on school papers brought home and no hyperkinetic behavior at home.

Krasner, L. Applications of token economy in chronic populations. Paper presented at the meeting of the American Psychological Association, Symposium on Token Economies: Current status--future directions, San Francisco, September 2, 1968. (a)

Purpose of paper is to look at application of current token economy programs with so-called chronic populations to determine differences from other token programs described elsewhere in literature and particularly to look at social implications of these programs as they may relate to social action. First token economy program with chronic population was that instituted by Ayllon and Azrin in Anna St. Hospital. Later programs are described. Goals of these programs are usually to change current behavior, ameliorate social conditions, better current lives of individuals but not necessarily to get them out of the institution. Krasner discusses: Importance of changing staff attitudes via token program with psychotic and geriatric patients (patient is approached as a responsible individual, nurse switches from custodial role to "hard-nosed behavior engineer"); social implications of token economies (closely related to Utopias); Cotter's work in Vietnamese mental hospital (Krasner criticizes); questions related to Utopian planning (goals of society, training necessary to shape or maintain these behaviors in society, modification of current way of life so there is fighting chance to initiate new planned program); classical Utopian writings (including Skinner's Walden II); difference between systematization of token economies and mechanization, flexibility of token economies, necessity of programming change into the design, incorporation of all principles of behavior modification in token economy programs (social reinforcement, modeling, placebo, expectancy). Paper argues that token economy programs at this point and time represent most advanced type of social engineering currently in use which have grown out of earlier applications of learning to modify behavior of disturbed people.

Krasner, L. Assessment of token economy programmes in psychiatric hospitals. Paper presented at the CIBA Symposium on Learning and Psychotherapy, London, January 1968. (Also, in R. Porter[Ed.], The role of learning in psychotherapy. London: Churchill, 1968). (b)

Krasner, L., & Atthowe, J. Token economy bibliography. Unpublished manuscript, State University of New York at Stony Brook, 1968.

Krasner, L., & Ullman, L. P. (Eds.) Research in behavior modification; new developments and implications. New York: Holt, Rinehart, & Winston, 1967. (Also, ERIC ED 25084).

Kulberg, J. M. The effect of social class, age, and sex upon the reward value of certain positive reinforcers. Dissertation Abstracts, 1967, 28 (5-B), 2127.

"The hypothesis that a child's age and the social class of his family interact to determine the relative effectiveness of various positive reinforcers was evaluated in this study. Comparison was made of the paired-associates learning of 80 white public school children from each of three grade levels, equally divided by sex and social class, under four different conditions of reinforcement. Subjects were assigned randomly to one of the four treatment conditions. Children were selected from grades 1, 5, and 9, and social class was determined by an operationally-defined criterion based on father's occupation and parents' education.

"Ten pairs of pictures of unrelated noun words were presented according to the recall method in paired-associates learning and programmed for a 3 sec. presentation, a 1 sec. transition, and a 13 sec. intertrial interval. A criterion of two error-less trials or a maximum of 15 trials was established. Upon each correct response, the subject received either a piece of candy; a token exchangeable for a choice from a selection of toys, trinkets, books, and jewelry; social approval in the form of an approving comment accompanied by a pat or smile; or a verbal indication of performance ("Right," "Correct"). These treatment conditions were selected to represent a range of possible reinforcement classifications which could be evaluated along several dimensions, and these dimensions were in turn related to different emphases in child training between the two major social classes being studied.

"Two criterion measures, a trials to criterion score and a total number of errors score, were obtained for each subject and analyzed separately. Orthogonal combinations of treatments, grade levels, social class, and sex yielded 48 experimental groups each containing five subjects and resulted in a 4x3x2x2 factorial analysis of variance design. Significant correlations between IQ and both criterion measures required application of covariance techniques at the ninth grade level.

" It was anticipated that children from middle class homes would manifest more generalized achievement striving and that their responses thereby would be relatively consistent despite variations in the rewards offered, while children from working class homes were expected to respond more to situational demands. The lack of an interaction effect between social class and reinforcement condition lent no support to such expectations.

"Reinforcer effects did vary as a function of the age and sex of the subjects. For first grade boys, the token condition was significantly more effective than all others; no differences were noted for the girls. At the fifth grade level, candy and approval proved to be more effective reinforcers than the token and performance conditions. All conditions were equally reinforcing for ninth graders. These findings were construed as support for the formulation that achievement striving becomes a more central motivational factor with age.

"A significant social class main effect at the ninth grade level disappeared when the effects due to IQ differences were partialled out by means of analysis of covariance.

Interpretation related these results to current thinking about class stratification, the effects of social class membership upon classroom learning, and the predetermined nature of intellectual development. Implications for classroom practice as well as the usual recognition of need for further research were discussed."

Kushner, M. Behavior therapy program at V. A. Hospital, Coral Gables, Fla. Newsletter, Association for the Advancement of the Behavior Therapies, February 7, 1967.

Kuypers, D. S., & Becker, W. C. How to make a token system fail. Exceptional Children, 1968, 35, 101-111.

Subjects: 6 3rd grade and 6 4th grade socially maladjusted Ss. (Observations conducted on only 3 Ss at each grade level.)
Responses: Relevant behaviors, reduced deviant behaviors.
Consequences: Points. BU prizes.
Procedures: Behaviors of 4 highly disruptive Ss recorded between 9:30 and 11:30 a.m. Behaviors of 6 Ss who included 4 Ss above and 2 less disruptive Ss recorded between 1:00 and 2:00 p.m. Deviant behaviors included gross motor behaviors, disruptive noise, disturbing others, contact, orienting responses, and verbalization. Orienting responses of less than 4 sec. duration did not count. Relevant behaviors observed in fixed order for 22 min. each session, 3 times/wk. Observations made on 20 sec. - observe, 10 sec. - record basis. Given class of behavior could be rated only once in observation interval. P-1; Baseline. Ts asked to handle Ss according to usual technique. Behavior had been recorded for about 3 wk. before P-1 began. P-2: Experimental. Instructions for initial introduction of token system and general instructions for continuing system given to T. Ss rated on how well they followed rules from 1:00 to 2:30. T rated Ss' behavior on scale of 1-10. Certain number of points would win prize. When rating S, T verbalized contingencies. Several rating periods each day and prizes given on different schedules of reinforcement. On 1st day, prizes given after 3rd rating period. Thereafter, given at end of day. After 4 days, both 3rd and 4th graders rated after 2 40 min. periods, and prizes distributed every other d . Number of points required to earn prizes gradually increased from 10 to 30 and from 25 to 35. P-3: Baseline. Experimental conditions

withdrawn. T decided to withdraw from study.
Results: For all periods, inter-observer reliability averaged 80-87%. P-1: Average percentage of deviant behavior for 6 Ss in afternoon was 54%. P-2: 27%. P-3: 41.5%. Average percentage of deviant behavior for 4 Ss had to be observed both morning and afternoon to be included in analysis, and if fewer than 3 Ss observed on any day, that period was eliminated. P-1: For 4 Ss, average percentage of deviant behavior was 53.2% for morning, 54.3% afternoon. P-2: 45% morning, 35.5% afternoon. P-3: 58.5% morning, 50.4% afternoon. Overall: 4 Ss improved considerably under token system, while 2 showed (at best) occasional good days. Although token program had significant effect, clear from individual graphs and generalization measures that program only moderately effective.
Comments: Experiment similar to O'Leary and Becker (1967), but present study not as effective in terms of dramatic changes in behavior for all Ss. Possible reasons for difference include: 1) Tokens or points were given for meeting an absolute standard in present study, rather than for improvement. 2) Attempts made to have T systematically apply differential social reinforcement between times points rewarded or during other times of day in former study. This aspect of earlier program probably responsible for much of its effectiveness. Points rewarded 30 or 40 min. later are not enough to have child learn more appropriate behavior. 3) T not trained in systematic application of behavior principles. Present study approximates what might happen if T read about a token system and tried to use it mechanically without fuller understanding of principles and supplementary procedures. 4) 4th graders were given points by art and music teachers almost noncontingently. The point system eventually changed so good behavior was essential in both periods. 5) T had great capacity for tolerating disruptions in class. Real failure in experiment was to give T sufficient support and information to keep her in study so that additional procedures could have been instituted. Two of morning Os irritated T very much, and this was a factor in her dropping out of study.

Kuypers, D. S., & Evans, M. B. A token system of reinforcement for a residential treatment program for emotionally disturbed children. Unpublished manuscript, Children's Research Center, University of Illinois, Emotional Disorders Project, December 1, 1967.

L'Abate, L., & Whitaker, D. L. An annotated bibliography of behavior modification with children and retardates. Unpublished manuscript, Georgia State College, Child Development Laboratory, August 15, 1967. (Also, ERIC ED 20025).

Lachenmeyer, C. W. Systematic socialization: Observations on a programmed environment for the rehabilitation of antisocial retardates. Psychological Record, 1969, 19, 247-257.

Criticism of token economy unit installed by Burchard in 1967 with 12 delinquent mentally retarded boys. Ss' IQ's ranged from 50 to 70 points; ages 12-19 yr. Criticisms categorized in 3 groups: (1) Problems due to contingencies controlled by Ss. Centered around attendants' (A) behavior and administration's gestapo techniques. As failed to continuously and strictly survey Ss' behavior, and As' behavior was directly affected by contingencies controlled by Ss. (2) Problems due to contingencies controlled by staff. As' behavior should have been under control of project's behavioral engineer. Did receive training in behavior modification and were under other behavioral controls, but these measures insufficient; previously developed patterns could not be affected by limited training. Most effective technique of control was collection of data by attendants, but formidable paperwork involved. As failed to deal with certain crucial response classes of Ss, were inconsistent in application of contingencies and sometimes actually shaped inappropriate behavior in Ss. Lack of precise and standardized definitions of response classes, ignorance of certain contingencies by some staff, and lack of coordination among shifts, personal attributes, philosophies and tolerance limits of As and phenomonon of "attendant isolation" from Ss were other problems. (3) Problems due to lack of cooperation from administration, hoarding, theft, loss, inflation of token economy, and lack of control over social exchanges. Economic possibilities of social exchanges lost because tokens had to be marked with each Ss' initials to avoid theft. Since Ss had to work for what other Ss in the institution had, they considered system coercive.

Lachenmeyer suggests following improvements in procedures: (1) Specify target behavior of Ss, procedures (e.g., positive reinforcement, punishment), physical setting for contingencies, and amount of surveillance by As. This could be done by (a) writing inventory of behaviors of inmates, and (b) specifying appropriate contingencies to be applied to attain explicit objectives. Social behavior is of crucial significance. (2) Same specifications apply to As as to Ss. In addition, should be (a) continuous on-the-job training in behavior modification, and (b) behavioral engineer in unit through all shifts, at least during initial stages of experiment.

Lawler, J. Establishing a token reinforcement system. Unpublished manuscript, Rainier School Buckley, Wash.

Lent, J. R. Mimosa cottage: Experiment in hope. Psychology Today, 1968, 2, 51-58.

Lent, J. R., Cotter, V., Spradlin, J. E., & Devine, P. A demonstration program for intensive training of institutionalized mentally retarded girls. Detailed Progress Report, January 1967 - January 1968, Bureau of Child Research, University of Kansas, Parsons State Hospital and Training Center, Parsons, Kan., Contract Nonr MR 1-801-C68, U.S. Department of Health, Education and Welfare.

Lent, J. R., LeBlanc, J., & Spradlin, J. E. Designing a rehabilitative culture for moderately retarded, adolescent girls. Unpublished manuscript, Parsons Research Center, December 8, 1967.

Subjects: 27 moderately retarded girls; data collected on 21 Ss. 15-21 yrs. old. Approximate IQ range: 25-55.
Stimuli: Mimosa Cottage. Ward modified to provide kitchen, dining, and living room areas similar to size and equipment to middle class homes. Sewing, ironing, dancing, game, party areas.
Responses: Behaviors useful to community. Grooming, walking, clothing care, dancing, sex education, leisure and social activities, town orientation, homemaking skills, and education. List included.
Consequences: Tokens. Metal planchets, then check marks. 3x5 cards with squares. Points tabulated each week. BU one side of card, money; other side activity. Community-oriented behaviors, e.g., going shopping. List included.
Procedures: Loss of points for disrespect, socially inappropriate behaviors, and lack of consideration and responsibility. List included. Baseline period: Behavioral check list, 6 wk. Polaroid cameras were used to show progress during experimental period.
Results: On test for differences between means of related samples, significant group improvement in all but verbal and social behaviors. Tables of data on behavioral change included. Percent change from baseline to follow-up for total group was greatest in clothes pressing (40), hair styling and combing (40), walking (40), and sitting (35), estimated. After 26 mo. of system, 10 of 27 Ss had been transferred. 8 transfers suggested behavioral improvement.

Comments: Primary purpose: Train for life outside institution. Also, train to make smoother adjustment to institutional life. Demonstration assistants' training: Operant conditioning principles, shaping animal behavior, recording behaviors, use of operant principles with girls. Aides and nurses received less intensive training. Rationale for use of token system rather than social reinforcement alone given. Programmed instruction. Community transition activity. Common questions on use of token economy answered.

Libermen, R. A view of behavior modification projects in California. Behaviour Research & Therapy, 1968, 6, 331-341.

Reports author's visits to behavior modification programs in California mental health facilities during August, 1967. Four token economies were seen: 2 with chronic schizophrenics (Patton State Hospital, Menlo Park V. A. Hospital) and 2 with adolescent and young adult retardates (Pacific State Hospital, Sonoma State Hospital). Another program used token and social reinforcement in group settings for Job Corpsmen attempting to build behavior that would facilitate job retention in community (Parks Job Corps Center). Several other projects not using token economies are also discussed. Some accomplishments briefly reported. Various projects compared as to: (1) Procedures and staff cooperation (Sonoma's project is failing because of poor staff training). (2) Individual (Patton, Pacific) vs. group-wide (Menlo Park, Sonoma) programs of reinforcement (individualized requires more staff but may be more effective). (3) Schedules of reinforcement (once new behaviors become stable on reinforcement schedule, intermittent reinforcement can be easily substituted). (4) Escape from contingencies (leaving hospital, hoarding and stealing, getting social approval for inappropriate behavior from people not involved in project [Job Corps]). (5) Unresponsive patients (possible reasons given). (6) Reinforcement of social interaction (most efforts unsuccessful; some possible solutions). (7) Behavioral goals and community adjustment. Considerable suspicion and hostility have been encountered from hospital administration, but groundwork may overcome this. G. W. Fairweather has developed a system in which small groups of chronic patients are formed and are reinforced with money and privileges for cohesiveness and cooperative task behavior, first in a small ward unit and later in a living situation outside the hospital.

Lighthall, F. F., & Cernius, V. Effects of certain rewards for task performance among lower-middle class boys. Unpublished manuscript, University of Chicago, December 1967. (Also, ERIC ED 19697).

Lloyd, K., & Garlington, W. K. Weekly variations in performance on a token economy psychiatric ward. Behaviour Research and Therapy, 1968, 6, 407-410.

Subjects: 13 chronic schizophrenic female patients. 60 yr. old. Hospitalized at least 5 yr.
Stimuli: Ward environment.
Responses: Personal care: Facial makeup, hair combing, neatness, cleanliness of clothing, attendance at morning pay station, bed making, breakfast and lunch eating habits.
Consequences: Ratings for all phases. Translated to tokens P-2 and P-4. BU not stated.
Procedures: P-1: Tokens given noncontingently. P-2: Ss received reinforcement for proper response. P-3: Same as P-1. P-4: Same as P-2.
Results: Group and individual mean ratings lower in P-1 and P-3. Absolute magnitude of changes between experimental conditions not great but consistent within and between patients.

Locke, B. J. Verbal conditioning with the retarded: Reinforcer, sex of subject, and stimulus pacing. American Journal of Mental Deficiency, 1969, 73, 616-620.

Subjects: 48 institutionalized retardates. All had participated in at least 1 verbal conditioning experiment unsuccessfully.
Stimuli: P-1: Deck of playing cards. P-2 and P-3: Stimulus cards, Taffel procedure, stimulus interval 7 sec. Examiners.
Responses: P-1: Color matching. P-2 and P-3: Emit pronouns I or WE.
Consequences: Tokens. BU money, merchandise, trinkets. Electromechanical dispensers for tokens. P-1: "Good" and tokens. P-3: "Good" only. See treatment conditions below.
Procedures: Token, "good" (direct). No token, noncontingent "good" (inverse). P-1: Preconditioning; reinforcement received as shown below. Noncontingent reinforcement delivered for non-colormatching responses. Control group received no reinforcement. Increasingly IR. P-2: Conditioning; baseline (cards 1-20). P-3: Conditioning; experimental (cards 21-80). Reinforcement received by experimental Ss; control Ss received no reinforcement. Half of Ss with preconditioning examiner; half with new examiner.
Results: Results from P-3:

	Tokens in P-1				No Tokens in P-1			
	Direct		Inverse		Direct		Inverse	
	Same E	Diff. E	Same E	Diff. E	Same E	Diff. E	Same E	Diff. E
Exper. M.	45.33	43.33	42.00	35.00	29.67	31.33	28.67	33.67
S.D.	10.21	13.89	4.32	11.78	11.44	10.63	12.28	14.20
Control M	20.67	22.67	40.67	22.33	29.67	29.00	15.67	17.33
S.D.	4.19	18.79	17.52	8.38	23.30	6.17	3.30	4.99

P-2: No significant differences between groups. "Good" clearly produced conditioning effects after systematic pairing with tokens but some effects were present in P-3, with or without tokens during P-1.

Locke, B. J. Verbal conditioning with retarded subjects: Establishment or reinstatement of effective reinforcing consequences. American Journal of Mental Deficiency, 1969, 73, 621-626.

Subjects: 54 institutionalized retardates. 48 randomly assigned to 12 treatment conditions. 6 were replacements in sessions excluded due to procedure violations. All Ss previous experience in 2 or more experiments, 1 of which was unsuccessful attempt to condition verbal behavior.
Stimuli: Successive stimulus cards, Taffel procedure. Presented at fixed rate. Inter-stimulus interval for 1/2 Ss, 7 sec.; for other half, varied as direct function of latency and duration of S's successive verbal emission.
Responses: Emit pronouns HE or THEY.
Consequences: Tokens . BU money, merchandise, trinkets. Electromechanical dispensers for tokens. "Good".
Procedures: Stimulus presentation and verbal exchanges between E and S recorded on tapes. P-1: No S reinforced during cards 1-20, baseline. P-2: Experimental Ss reinforced during cards 21-80. Control Ss: No reinforcement for any response. For fixed stimulus Ss, E presented new card regardless of whether response was initiated or completed. Interrupted responses which included pronoun were reinforced. Reinforcement delivered in as close temporal proximity as possible to completion of sentence. For variable rate Ss, E presented new card only after complete response was emitted.
Results: P-1: No significant differences among treatment groups. P-2:

	Token		Good		Control	
	Fixed	Variable	Fixed	Variable	Fixed	Variable
Male -- Mean	38.50	45.50	35.50	40.75	24.00	22.50
S.D.	17.01	6.18	6.26	12.97	15.00	10.60
Female--Mean	41.50	39.00	20.00	33.75	26.50	21.00
S.D.	11.61	13.15	10.98	7.29	6.02	12.21

Comments: Average interval under variable stimulus was 6.63 so not surprising that the means were close.

Lovitt, T. C., Guppy, T. E., & Blattner, J. E. The use of a free-time contingency with fourth graders to increase spelling accuracy. Behaviour Research and Therapy, 1969, 7, 151-156.

MacKay, H. Token economy with retarded children. Unpublished manuscript, Neurology Research, Massachusetts General Hospital, Boston, 1967.

MacPherson, C. A case study in the application of behavioral principles to individualize instruction and better motivate students in a fourth grade with many problem children. Master's thesis, University of Illinois, 1968.

Mankelker, A. The effects of a token system on a teacher's social contacts with her students. Unpublished master's thesis, University of Kansas, 1969.

Marks, J., Sonoda, B., & Schalock, R. Reinforcement versus relationship therapy for schizophrenics. Journal of Abnormal Psychology, 1968, 73, 397-402. (Also, Proceedings of the 75th Annual Convention of the American Psychological Association, 1967, 2, 237-238).

Martin, G. L., England, G., Kaprowy, E., Kilgour, K., & Pilek, V. Operant conditioning of kindergarten-class behavior in autistic children. Behaviour Research & Therapy, 1968, 6, 281-294.

Subjects: 7 autistic children in 1 class. 8-13 yr. old.
Stimuli: Tasks and instructions at kindergarten level.
Responses: P-1: No tantrums. P-2: Token responding. P-3: Sitting quietly at desk. P-4: Echoing words, then emitting appropriate words to objects. P-5: Listening. P-6: Tracing, copying. P-7: Matching to sample (draw x on like items).
Consequences: Poker chips. BU breakfast or lunch dispensed in small amounts, and goodies. Ignoring in P-1. Ratio of chips to BU--5:1. Bank used to hold tokens.
Procedures: Responses developed in 1:1 situation. S:E ratio gradually increased. From weeks 3-6, number of Ss in classroom at once increased to 7. Weeks 7-12, Ss received 30 min. verbal training in group of 7 Ss, 1 E. Groups broke down then to 3:1, 4:1, 2:1, and 1:1 S:E ratio. P-1: Work on behavior problems. P-2: Token training. P-3: Instructions "sit still". Time gradually increased. Once response was conditioned, it was reinforced only occasionally during other tasks. P-4: Fading procedures. Also during P-5, P-6, and P-7.
Results: P-1: After 9 sessions, representative S had no more tantrums. With one S, head-beating and hand-biting were mildly punished. These decreased to 1 per week. P-2: S conditioned to tokens by end of 1st session. Then reinforcement contingent upon desired response. P-3: All Ss sat quietly for 5 min. within 2 sessions. P-4: 4 Ss acquired extensive naming vocabulary in 60 sessions. 3 Ss progressed less rapidly. P-5: After 30 hr., representative S responded to 19 questions. P-6: After 30 hr., 4 Ss had attained various response levels. 3 Ss required special procedures for attention. P-7: 2 Ss could match. Other Ss could only point to like items. Increasing S:E ratio on all tasks did not cause disruptions.
Comments: Different from Lovaas procedures in gaining child's attention (Martin will not say "Look at me") and handling mild tantrums (ignored by Martin).

Martin, M., Burkholder, R., Rosenthal, T. L., Tharp, R. L., & Thorne, G. L. Programming behavior change and reintegration into school milieux of extreme adolescent deviates. Behaviour Research & Therapy, 1968, 6, 371-383. Experiment I.

Subjects: 9 Ss. 13-18 yr. old. Misbehavior included fighting, truancy, sexual promiscuity, thieving, breaking school rules.
Stimuli: School environment.
Responses: Appropriate classroom behavior.
Consequences: Points. BU canteen, catalog purchases, field trips, notes to parents to be exchanged for reinforcers at home.
Procedures: P-1: Baseline. P-2: Tokens contingent upon target behavior. FR. P-3: Same as P-2, except VR and social reinforcement. Ts labeled contingencies often when delivering reinforcement.
Results: 2 Ss: Steadily increased frequency of work behavior. 2 other Ss: Trend toward increasing work. 3 Ss: Decreasing work frequency. 2 Ss fluctuated. Data also variable on disruptive behavior: 1 S none. 2 Ss infrequent. 5 Ss with "acting out" problems. 1 decreased in disruptive behavior, 2 Ss slightly less disruptive, 2 other Ss increased disruptive behavior. See comparison of Experiment II results.

Martin, M., Burkholder, R., Rosenthal, T. L., Tharp, R. L., & Thorne, G. L. Programming behavior change and reintegration into school milieux of extreme adolescent deviates. Behaviour Research & Therapy, 1968, 6, 371-383. Experiment II.

Subjects: 5 Ss. All but 1 S same as Experiment I.
Stimuli: School environment.
Responses: See under each phase in Procedures.
Consequences: See under each phase in Procedures.
Procedures: Transition week. All parents seen by staff. P-1: Target behavior: Attend school 1-4 hr. daily, at least 1 hr. of good behavior; pass test on project handbook. Reinforcers: Teacher attention and points. BU canteen, reinforcers from home. Point review every 5 days. P-2: Attend school full time, some academic tasks, no damaging behavior. Reinforcers same as P-1 except tutoring, see counselor by appointment, extracurricular activities. Review available every 20 days. Recognition for going into P-3: Party held in child's honor. P-3: Target behavior same as P-2, except no behavior allowed which could not be tolerated in classroom. Schoolwork, individually assigned, at passing level. Discharge adequately one committee job. Reinforcers same as P-2, except added trips, special course, go out to lunch. Eligible for review after 10 wk. P-4: Same as P-3 except target behavior included some school work at grade "3" or above, attendance at one class (at least) in public school, membership in Student Council. Reinforcers: Trips dropped, "objects" added. Eligible for review after semester. Recognition: Graduation dinner. P-5: Attendance at public school, passing grades, appropriate behavior at school. Reinforcers: Increased home BU (no notes from school about progress if possible to maintain behavior without), special assistance with school, extra curricular activities, cash bonuses for attendance and grades. Letters sent to child's parents as recognition at end of P-1 - P-4. Special care taken when reinstating Ss in school.
Results: Parents and Ss displayed positive changes in behavior. Experiment II seemed fairer to Ss than I. Complaining in I largely eliminated in II. No destructive behavior during II, in contrast to I. Only 1 S failed to evidence steady increase in work. 3 Ss showed marked decrease in highly disruptive behavior. Variability greatly reduced from Experiment I in both measures of disruption and work. Often Ss dropped in work and increased in disruptions immediately after promotion. No S failed to advance. 2 Ss were ready to begin part time in public school. 1 S was attending a secondary school and planned to switch to expanded vocational program the following autumn. 2 Ss planned to start secondary school part time in autumn. Experiment II procedures more successful than Experiment I. Followup in autumn showed all Ss successfully attending part time secondary school, except 1 who dropped out of school.
Comments: Experiment emphasizes value of behavior supports to "map" and "prop" emergent responses, as well as controlling response reinforcement contingencies.

Martin, M., Schwyhart, K., & Wetzel, R. Teaching motivation in a high school reading program. Journal of Reading, 1967, 11, 111-121. (Reprint) 54

Subjects: Secondary remedial students in a reading class. Mexican-American disadvantaged students. Total of 6 classes, 95 students. Token system used in 3 classes. Same T taught all experimental classes and two control classes. Halfway through school yr., T in control class I reassigned to token rooms E2 and E3.
Responses: School attendance, punctuality, preparedness, consideration of others, working in class, completed assignments, discussion participation, completion of curriculum materials. Recording method explained in detail.
Consequences: Points on chart. No response costs. BU reinforcers available in any classroom Grades, letters of commendation, school absence to attend school sponsored activities. Ts must recognize following principles of learning: (1) Behavior required for earning tokens must be in repertoire of student. Careful programming is needed to insure that all pupils can engage in some behavior that will earn tokens. (2) Tokens must be given contingent upon appropriate behavior, must not be given unless specified behavior has occurred. (3) Reinforcement must be delivered promptly. Tokens should be given as soon after incurrence of specified behavior as possible. (4) Tokens must be exchanged for something that is of value to individual; will vary among individuals and for a single individual overtime.
Results: In spite of poor overall results in token room E2, combined data showed several significant differences between experimental and control classes. More work and total work related behavior in token classes, as well as less aimless sitting, less tardiness, more completed assignments handed in, more books read and reported on. With exception of absences, results on all other behaviors, though not statistically significant, were in desired directio No significant difference in reading improvement. During last 6 wk. of yr., more powerful reinforcer increased work related behavior in E2.

McClain, W. A. The modification of aggressive classroom behavior through reinforcement, inhibition and relationship therapy. Training School Bulletin, 1969, 65, 122-125.

Classroom teacher and behavior therapist used varied forms of behavior modification with 10 yr. old acting out male. E saw S individually twice/wk. for 30 min. over 6 mo. period. T spent the majority of time with S. Socially desirable behaviors were reinforced, undesirable behaviors ignored. 3 basic rules established as criteria for acceptable behavior concerned talking in the classroom without permission, fighting; and speaking without raising hand. Daily reward for appropriate behavior: Gold star. Weekly reward: Free movies. Monthly reward: Models from hobby shop. 5 consecutive stars earned movie pass. 1st 6 wk. of experiment showed no consistent behavior patterns. By end of study, objective measurement in task behavior showed some improvement.

McKenzie, H. S., Clark, M., Wolf, M. M., Kothera, R., & Benson, C. Behavior modification of children with learning disabilities using grades as token reinforcers. Unpublished manuscript, Child Research Bureau, University of Kansas, 1967. (Also, Behavior modification of children with learning disabilities using grades as tokens and allowances as back-up reinforcers. Exceptional Children, 1968, 34, 745-752).

Subjects: 10 students in learning disabilities class. 8 boys, 2 girls. 10-13 yr. old. Ability levels above educable mentally retarded range, but achievement levels retarded by at least 2 yrs. in one or more academic areas.
Stimuli: Programmed instructional materials and workbook assignments. Weekly assignments in each of five instructional areas, one assignment sheet for each area: Reading, arithmetic, spelling, penmanship, English composition, and grammar.
Responses: Attention to task materials.
Consequences: P-1: Recess for successful completion of all assignments for given assignment week. Free time at end of academic period. Special privileges. Group vs. individual lunch. Teacher attention. Weekly grades taken home to parents for signature and return to teacher. P-2: Pay for weekly grades in form of weekly allowance by parents.
Procedures: Objectives: Assess whether pay for grades token system would increase academic behavior, reduce usual problems with token economies. Assignment sheet listed material to be worked on each day, total number of responses assigned. Child recorded starting and finishing time, teacher or aide recorded number of responses completed, number correct, child's grade. P-1: Consequences contingent upon target behavior. Teacher conducted group parent conferences once a month. Discussions about academic behaviors and reinforcers with individual children and children as a group. To insure consistency, Es observed teacher and aides and made at least one report daily to teacher concerning application of behavior modification technique. By daily discussion of tally sheet, T was able to increase her frequency of attending to good behaviors and virtually to ignore unacceptable ones. P-2: All P-1 procedures continued but BU weekly allowance. Children paid for average weekly grade in each subject area. Near end of P-1, parents were instructed in pay for grades procedure. Children's maximum earning varied from 70¢-$3.50. Incompletes in subject matter subtracted money from allowance, so possible for child to owe money to parents. Indebted child performed some household chores for his debt. Parents calculated amount earned each Friday and important weekly events and encouraged children to spend large portion of allowance immediately. Child expected to pay for all items valued highly. Children not allowed to earn other money in home. Money coming from outside the home banned. Procedures continued throughout year and while some children were returned to regular classes.
Results: Marked increase in attending to reading during P-2. Overall medians increased from 68% in P-1 to 86% in P-2. Similar results obtained in arithmetic. Overall medians increased from 70% in P-1 to 86% in P-2. In two subjects, could not be concluded that increases in attending to arithmetic in P-2 could be attributed solely to pay. Although observations were stopped after Christmas vacation, number of incompletes and percentages of correct responses indicated that all Ss except 1 maintained level of academic behavior attained during P-2 for remainder of school year. Students' earnings varied from week to week, and ranged from 30-85% of maximum possible earnings. At end of school year, all 10 Ss working successfully in all academic areas, 1-4 levels above starting levels. 6 of 10 students returned full time to regular classes, each one returned to one grade higher than previously. The exceptional S would alternate several wks. of complete work and high grades with several wks. of incomplete work during P-2; his parents reported that they had never reached agreement on proper administration of pay procedures and were very inconsistent in its application.
Comments: Teacher not in unfamiliar role. Weekly allowances as BU for grades allowed parents to administer exchange. T spent little extra time. Neither parents or school encountered extra costs, since parents usually gave allowances (noncontingently).

Meichenbaum, D. H. The effects of instructions and reinforcement on thinking and language behavior or schizophrenics. Behaviour Research & Therapy, 1969, 7, 101-114.

Subjects: 48 male schizophrenics, Veterans Administration Hospital, Danville, Illinois. All less than 50 yr. old. Minimum length of present hospitalization: 12 mo. Ss randomly assigned to 8 groups of 6 Ss each, 6 experimental and 2 control. 20 male Ss were included for comparison purposes; no history of psychiatric illness; experimental treatments not administered to them.
Consequences: Social reinforcement, both positive and negative. Token reinforcement: canteen stubs. BU cigarettes, candy, other valued personal items. Authors state that use of instructions to foster behavior change seems self-evident but somehow not included in many behavior designs. Present study includes 3 important elements of instructions to S: (a) Definitions and examples of desired and undesired response classes to teach S to discriminate what E wants S to emit; (b) statement of nature and value of reinforcement to identify reinforcement of S and to increase S's motivation to comply with E; (c) Statement of contingency of reinforcement to inform S of behavior and schedule of reinforcement.

Purposes of study: Investigate response and stimulus generalization of verbal conditioning across response classes, individuals, and over time; examine relative effectiveness of prolonged training of schizophrenics with instructions and contingent social and token reinforcement; examine generalization effects of training for one verbal response class, either healthy talk (HT) or abstract interpretations to proverbs on other verbal response class which was tested but not reinforced; examine generalization of this behavior to other verbal tasks administered under neutral conditions; specifically, similarities sub -test of Wechsler-Bellevue Adult Intelligence Scale Form II (1946) and Kent-Rosanoff Word Association Test; examine under neutral conditions generalization of healthy talk to person other than E (patient confederates) and to E during 1 wk. followup structured interview; compare group of nonpsychiatric medical patients with schizophrenic patients on dependent variables before and after treatment.
Results: Evidence indicated that (a) main dependent variables of proverb abstraction and percentage of sick talk (ST) reliability assessed; (b) schizophrenics compared with hospitalized medical patients performed significantly inferior on measures of thinking and language behavior prior to treatment; (c) 8 groups equivalent on dependent and and generalization measures prior to differential treatment; (d) differential experimental treatments were achieved.

Analyses of pre- and post-treatment proverb and % ST change scores and acquisition data indicated that 6 experimental groups differed significantly from 2 control groups; Ss trained with token reinforcement improved most. Absence of significant difference between post-test proverb performance for Ss trained for proverb abstraction and medical patients underlined effectiveness of treatment approach. Evidence obtained for generalization effects of training for one verbal response class, either healthy talk or abstract interpretations to proverbs, on other verbal response class which was tested but not reinforced. Ss trained for HT with token and social reinforcement significantly improved on proverbs post-test. Ss trained for proverb abstraction with token and social reinforcement emitted significantly less ST on post-test interview with E. Little or no extinction effects shown by Ss trained for proverb abstraction or for HT on post-test, even though training instruction and reinforcement removed.

Ss trained only on one response class, either healthy talk or proverb abstraction, improved as much as Ss trained for both response classes. Absence of facilitating effect on proverb performance and % ST emitted for Ss trained on both proverbs and ST may be due to ceiling effects accounted for by level of schizophrenic Ss' intellectual ability, normative distribution of such behavior of sampled population, or scoring procedures.

Effects of experimental treatment generalized over time to followup interview administered by E, to post-test interview administered by patient confederate, and to other verbal tasks administered under neutral conditions. In several instances patients who were trained only to emit "healthy talk" repeated, aloud and spontaneously, experimental instruction, "give healthy talk, be coherent and relevant" while being tested for proverb abstraction. Instructions given by E became discriminative stimuli and acted as general set for behavior emitted on other tasks. This self-instruction aided S in attending to task demands, thus not permitting internally generated stimuli to interfere with cognitive and language behavior (from article discussion).

Author suggests that in order to operantly condition schizophrenic, examiner must actively dispense reinforcement, making as much psychological contact as possible with S. Possible support for this hypothesis comes from work of Lindsley (1963) who used a free operant conditioning procedure with schizophrenics where reinforcements were dispensed mechanically. He concluded that vocal hallucinatory symptoms and possibly all psychotic symptoms appear to have independence from their environmental consequences or direct reinforcement. It is suggested that a stimulus does not become an environmental consequence or reinforcement unless it registers with S and that the mechanical dispenser Lindsley employed may not have met requirement of sustaining attention of schizophrenic to demands of task. Thus operant conditioning may modify intentional responses by causing schizophrenic to shift his attention from internally generated stimuli.

Meichenbaum, D. H., Bowers, K. S., & Ross, R. R. Modification of classroom behavior of institutionalized female adolescent offenders. Behaviour Research & Therapy, 1968, 6, 343-353.

Subjects: 10 adolescent female institutionalized offenders. Unmanageable. Divided into 2 classes, I and II. Control -- 12 non-institutionalized girls at nearby school.
Stimuli: Morning and afternoon classes.
Responses: Appropriate behavior. Observation technique. Allowed approximately 30 observations per girl, 1 hr. period, class of 6.
Consequences: BU money. Paper slips with number of appropriate behaviors were tokens. P-3: Slips stated BU earned.
Procedures: Class I (N=4) remedial 8th, academic work. Class II (N=6) 8th grade, 20% time vocational. P-1: Baseline. P-2: Response in afternoon reinforced FI. P-3: Reinforcement in afternoon FI, morning reinforcement VI. P-4: Reinforcement VI both morning and afternoon. Response costs for inappropriate behavior. Ss could not lose more money than earned previous day or go into debt.
Results: P-1: Twice as much inappropriate behavior as non-institutionalized peers. After P-1, disruptive classroom behavior was reduced to level of non-institutionalized adolescents. Peer reinforcement of inappropriate classroom behavior was attenuated. Study of FI and VI schedules suggested that factors of complexity, perceived unpredictability, and temporally remote secondary reinforcement undermined effectiveness. Use of a dichotomous recording technique dealt adequately with problem of behavior complexity and variety. Need to phase out reinforcement and to pair potent reinforcers with social reinforcement was indicated. Mean percentage appropriate behavior: P-1: Exper.; 45, S. D. 30.15. Control; 83, S. D. 17.38. P-2: Week 1, exper.; 52.13 (a.m.), 65.25 (p.m.). Week 2, 36.29 (a.m.), 52.86 (p.m.). P-3: 84.50 (a.m.), 92.00 (p.m.). P-4: 78.17 (a.m.), 80.00 (p.m.). P-4: Ss losing money reinforced misbehavior in peers.

Comments: Appropriateness of behavior could be defined and reliability identified in the context of classroom situation.

Meyerson, L., Kerr, N., & Michael, J. L. Behavior modification in rehabilitation. In S.W. Bijou & D. M. Baer (Eds.), Child development I: Reading in experimental analysis. New York: Appleton-Century-Crofts, 1967.

Michael, J. Management of behavioral consequences in education. Inglewood, Calif. Southwest Regional Laboratory for Educational Research and Development, 1967.

Analysis of educational process: One teacher/one learner and one teacher/several learners. Basic concepts and principles of effective usage of the science and technology of consequences. Possibilities for improving educational practice, including use of token economies. Reports studies by Michael and Jensen (1964) with 3 boys around 10 yr. old in a summer remedial reading class. General results of experiment were that children worked, on the average, about 5 hr. a day, hardly ever missed sessions, were extremely well behaved during entire procedure. Study demonstrates that no worsening of situation was necessary to maintain highly motivated and effortful educational activity. Function of tokens was to break up large value reinforcers (bicycles, large toys, reinforcing activities) into small units which could be administered for small steps of educational activity and which could be administered immediately. Criticisms of token economies by educators discussed (bribery, children come to expect rewards for everything they do, crass materialism, lack of performance when tokens are withdrawn, cannot be done in ordinary classroom).

Mithaug, D. E., & Burgess, R. L. Effects of different reinforcement procedures in the establishment of a group response. Journal of Experimental Child Psychology, 1967, 5, 441-454. Experiment I.

Subjects: 12 children, 5-9 yr. 4 groups. No music experience.
Stimuli: Piano - keyboard instruments. Notes flashed on screen for 30 sec.
Responses: Electromechanical counters recorded key presser. Press same key as flashed note.
Consequences: Light flash signalled point. BU prizes.
Procedures: P-1: Reinforcement for response on lower octave but not higher octave. P-2: Reinforcement for higher octave, not lower. For 6 Ss under P-1, reinforcement received for lower octave; for other 6 Ss, reinforcement received for higher octave. For 6 Ss under P-1, reinforcement received for higher octave, for second 6 Ss, reinforcement received for lower octave. Procedure used to check against order effect.
Results: Individual response rate increased when reinforced, decreased when not reinforced. (30.5 compared to 3.4 mean number of correct responses).

Mithaug, D. E., & Burgess, R. L. Effects of different reinforcement procedures in the establishment of a group response. Journal of Experimental Child Psychology, 1967, 5, 441-454. Experiment II.

Subjects: 12 children, 5-9 yr. 4 groups. No music experience.
Stimuli: Piano - keyboard instruments. Notes flashed on screen for 30 sec.
Responses: Electromechanical counters recorded key presser. Press same key as flashed note. Group must press within 5 sec. of each other to receive group reinforcement.
Consequences: Light flash signalled point. BU prizes. Group light flash for group response. Each S gets a point for group reinforcement. More points required for prizes than Experiment I.
Procedures: For 2 groups, P-1: Individual and group reinforcement. P-2: Group reinforcement. P-3: Same as P-1. For other 2 groups, P-A: Group reinforcement. P-B: Individual and group reinforcement. P-C: Group reinforcement.
Results: Zero response rate under group reinforcement, high response rate under individual and group reinforcement. (1.24 compared to 0 mean number of correct group responses per sec.).

Mithaug, D. E., & Burgess, R. L. Effects of different reinforcement procedures in the establishment of a group response. Journal of Experimental Child Psychology, 1967, 5, 441-454. Experiment III.

Subjects: 12 children, 5-9 yr. 4 groups. No music experience.
Stimuli: Piano - keyboard instruments. Notes flashed on screen for 30 sec. Before note flash, Ss required to perform new response. Lower octave marked with black tape.
Responses: Interaction task before same response. Each S in turn pressed keys previous S did not press. Process timed.
Consequences: Light flash signalled point. BU prizes.
Procedures: For 2 groups, P-1: Individual and group reinforcement. P-2: Group reinforcement. P-3: Same as P-1. For other 2 groups, P-A: Group reinforcement. P-B: Same as P-1. P-C: Group reinforcement.
Results: Zero response rate under group reinforcement, high response rate under individual and group reinforcement (.67 compared to 0 mean number of correct group responses per sec.).

Mithaug, D. E., & Burgess, R. L. Effects of different reinforcement procedures in the establishment of a group response. Journal of Experimental Child Psychology, 1967, 5, 441-454. Experiment IV.

Subjects: 12 children, 5-9 yr. 4 groups. No music experience.
Stimuli: Piano - keyboard instruments. Notes flashed on screen for 30 sec.
Responses: Electromechanical counters recorded key presser. Press same key as flashed note. Gebrand's Cumulative Recorder recorded group response.
Consequences: Light flash signalled point. BU prizes. Group light flash for group response. Each S received point for group reinforcement. More points required for prizes than in Experiments II and III.
Procedures: P-1: Group reinforcement. P-2: After steady response rate under P-1, individual reinforcement. P-3: After steady response rate under P-2, individual and group reinforcement. P-4: After steady response rate under P-3, same as P-2.
Results: P-1: Cumulative group response rate 0.0. P-2: 15 per min. P-3: 33. P-4: 19.2.

Mithaug, D. E., & Burgess, R. L. The effects of different reinforcement contingencies in the development of social cooperation. Journal of Experimental Child Psychology, 1968, 6, 402-426.

In a series of five experiments, several reinforcement contingencies were evaluated as to their relative effectiveness in establishing and maintaining social cooperation. Children ranging from 5-10 yr., were divided into six 3 member groups.

The present investigation attempted to replicate the findings of Mithaug and Burgess (1967) that the group response rate is higher under group and individual reinforcement than under individual reinforcement only. In addition, relative importance of individual feedback, by which individual receives information that he is responding correctly, was investigated more systematically. Following conditions were investigated: Group reinforcement with individual feedback, individual reinforcement with feedback, group and individual reinforcement with individual feedback. Major difference between group reinforcement of previous study and this study is the addition of individual feedback for correct individual responses. The two remaining conditions, individual reinforcement with feedback, and group and individual reinforcement with individual feedback, are the same as the individual reinforcement condition and the group and individual reinforcement condition in the previous study. In present study, terms have been changed slightly to make explicit that individual feedback is always present in these conditions. Summary of findings of present study: (1) Group reinforcement without individual feedback was ineffective in generating group response (Mithaug & Burgess, 1967). (2) Individual reinforcement with feedback and group and individual reinforcement with individual feedback were effective in generating base group response rate or operant level of group responses. (3) Group reinforcement with individual feedback was effective in strengthening and maintaining group response above base rate or operant level. (4) When conditioned reinforcers were visible to Ss for group responses but not for individual responses, group and individual reinforcement with individual feedback was effective in strengthening and maintaining group response above base rate. (5) Differential response patterns (division of labor) were produced only under condition of group reinforcement with individual feedback.

During group and individual reinforcement with individual feedback, Ss reinforced for both correct individual responses and correct group responses. Data indicated that group responses and concomitant amount of reinforcement decreased during this condition while individual response rate and individual reinforcement increased, resulting in less coordinated and more individualistic response patterns. Probably the more effective way to establish and maintain social cooperation in general is to provide positive reinforcement to each of the members contingent upon the coordinated act, as well as some form of individual feedback for appropriate individual responses. (Summary from article).

Morice, H. O. The school psychologist as a behavioral consultant: A project in behavior modification in a public school setting. Psychology in the Schools, 1968, 5, 253-261.

Reports project designed to (1) investigate feasibility of program designed to cast school psychologist in role of behavioral consultant and (2) ascertain efficacy of basically operant approach to treatment of psycho-educational problems in typical school setting. Two elementary counselors and a school psychologist worked in 4 elementary schools for seven months. Six orientation meetings set up operating framework and provided brief seminar on operant conditioning. 8 Ss were dealt with for disruptiveness, 4 for nonattentiveness, 6 for not meeting work demands, and 4 were miscellaneous cases of inappropriate behavior. Procedure used was: Referral, observation of S in class, interview with T, selection of target behavior, description of behavior topography, development of recording method, baseline and modification phases. Antecedents included self-recording on work, change of seating, semi-isolation, reprogramming work. Consequences included systematically attending or ignoring behaviors and rewarding with candy, tokens, or some permissive activity. 7 of 8 disruptive Ss, 4 nonattentive Ss, and 6 poor workers showed substantial improvement. Formal data was available on most of these. Case studies of 4 Ss are given, including one in which a bright 6th grade boy self-recorded completed work and was rewarded with points exchangeable for money at home. After a falling-off period of increased work, BU was discontinued but self-recording was continued; work output rose to 100% and continued rest of term. Difficulty of continuous data collection by teachers cited. Use of spotcheck sheet overwhelmingly preferred to time-sample records. Self-recording device for work is explained.

Murdock, E. E., & Della-Piana, C. M. Contingent stimuli in the classroom. NSPI Journal, 1970, 9 (February), 6-9.

Narrol, H. G. Experimental application of reinforcement principles to the analysis and treatment of hospitalized alcoholics. Quarterly Journal of Studies in Alcohol, 1967, 28, 105-115. (Reprint)

Subjects: Maximum of 8 Ss at any one time. Firmly diagnosed as alcoholic. State Hospital. Males between 20-50 yr. old. Total 17 Ss.
Stimuli: Ward or other work environment.
Responses: Employment on or off ward to achieve higher level wards.
Consequences: Points. BU room and board, clothing maintenance, canteen purchases, Alcoholics Anonymous meetings, short leaves of absence, disulfram treatments, psychotherapy, special instruction. 100 points per hr. could be earned.
Procedures: Ss started in (1) closed ward of low status, substandard materials and social comfort, curtailed freedom. Higher level wards: (2) Closed ward, on-ward employment and more pleasant environment. (3) Semiclosed ward, ground privileges, off-ward employment available as special purchase, even better social and material environment. (4) Open-ward, off-ward employment, short passes, better environment. (5) Open-ward of own choosing, off-ward employment, progressively longer passes, better environment. Ss stayed on each level at least 1 week. Could purchase advancement only at weekly intervals.
Results: 3 of 17 Ss failed to remain in project less than 9 wk. 2 of these were first 2 project members and went absent without leave, possibly before gaining confidence in pay-off. Supervisors grew increasingly more competitive for services of Ss. Average work day for Ss was 8 hr., for non-project patients, 4 hr. When supervisors began to relax contingencies, work performance decreased. Recreation, canteen, leaves

of absence and A. A. meetings were preferred purchases. Almost no Ss purchased special treatment, hobby or vocational instruction, even though they had surplus points. Favorable comment about project increased, but no non-project member ever volunteered for project.
Comments: Pilot project. Importance of establishing positive target behaviors which will be useful in overcoming alcoholism is emphasized.

Nevin, D. A. Prediction of response to a token economy treatment program in a mental hospital. Progress report on Ph. D. research, Fordham University, October 1968.

Nolen, P. A., Kunzelmann, H. P., & Haring, N. G. Behavioral modification in a junior high learning disabilities classroom. Exceptional Children, 1967, 34, 163-168.

Nugent, J., & Pooley, R. General media considerations and specific applications for the CASE Training Institute. Unpublished manuscript, Case Training Institute for Behavioral Research, Washington, D. C., January 1967.

O'Brien, F. O., Azrin, N. H., & Henson, K. Increased communications of chronic mental patients by reinforcement and by response priming. Journal of Applied Behavior Analysis, 1969, 2, 23-29.

Subjects: Chronic schizophrenic patients, 13 Ss. 29-60 yr., mean age 50. Ss chosen because long institution history had resulted in passive acceptance of hospital environment.
Responses: Suggestions for feasible improvement in motivating environment.
Stimuli: Motivating environment (Ayllon and Azrin, 1968).
Consequences: Tokens, BU variety of privileges, consumables, articles.
Procedures: Reinforcer sampling study (Ayllon and Azrin, 1968) implied that to increase patient's suggestions, ward staff should require rather than await or invite attendance at location where suggestions would be immediately reinforced. Since required attendance would also constitute interruption of competing behaviors, any change in patient's requests might be attributable to patient's interruptions rather than to patient's presence in reinforcing situation. Control procedure was used in which competing behaviors were similarly interrupted but without required attendance in reinforcement situation. Changes in patient's suggestions might also be attributed to imitation if suggestions were made in group situation. Accordingly, response priming procedure was also evaluated in situation where only one patient was present at given time. At each suggestion meeting, leader asked 3 questions of each patient designed to prompt suggestions regarding improved medical, administrative, and reinforcement procedures. All suggested changes were granted by leader saying "Yes" if change held any hope of improved treatment for S. If change was for an additional

reinforcer, leader stated cost in token points at time request was granted. 3 separate experiments, all using an ABA design.
Results: 192 suggestions recorded by recording secretary. Only 3 considered unfeasible or whimsical. Of the remaining, 5% concerned with medical program, 24% with therapeutic program, 71% with reinforcers. Every S made at least one suggestion. Ss' suggestions were increased by response priming procedures. Lingering effect of priming was seen in slightly higher level of suggestions after priming than before. Increase was obtained for most Ss whether suggestion procedure was group meeting or private interview. Frequency of suggestion was direct function of probability of staff member following that suggestion. When one staff member followed suggestions and second did not, high frequency of suggestion occurred in presence of member who did reinforce and low frequency in presence of one who did not. Priming procedure complementary to reinforcement procedure in that few suggestions were made when priming was used without reinforcement or when reinforcement was used without priming. Increased suggestions during priming cannot be attributed to interruption of competing activities because no other activities were scheduled at that time; in addition, non-priming control procedure interrupted competing activities but in different location. Increase of suggestions during priming might have been caused by imitation of other patients during required attendance at group, but same increase occurred during individual meetings where no other patients present. Simple familiarization resulting from required attendance could not be responsible because suggestions decreased when priming was discontinued and after familiarization had already taken place.

O'Leary, K. D., & Becker, W. C. Behavior modification of an adjustment class: A token reinforcement program. Exceptional Children, 1967, 33, 637-642.

Subjects: 8 most disruptive children in adjustment class. 17 Ss in entire class. Token reinforcement was in effect for all Ss but study focused on 8 most disruptive. 3rd grade. IQ (Kuhlmann-Anderson) ranged 80-107.
Stimuli: Task materials.
Responses: Be quiet. In seats during arithmetic, group reading, and listening to records or stories. Face front. Raise hand. Work. Pay attention. Desk clear. Group points for total class behavior. Reduced deviant responses: Pushing, answering without raising hand, chewing gum, etc.
Consequences: T's ratings in small booklets on each S's desk. Ratings were from 1-10. Social reinforcement. BU candy, trinkets. Total cost for 2 mo., $80.76. Group points, BU popsicles at end of week.
Procedures: P-1: Baseline. T handled Ss as usual. P-2: T placed rating in books at end of each lesson. Number of ratings gradually decreased from 5 to 3 and the number of points to obtain a prize gradually increased. To extinguish deviant behavior, T ignored S and reinforced appropriate behavior of another S. E placed classroom instructions on the blackboard, explained procedures to Ss. E repeated instructions each day for 1 week and rated Ss to provide a norm. First 3 days, tokens exchanged at end of token period. Next 4 days, exchanged at the end of the token period on the 2nd day. Next 15 days, 3 day delay. Last 24 days, 4 day delay.
Results: P-1: Average daily percents of deviant behavior ranged 66-91%. Total average, 76%. P-2: Group points -- popsicles received on 7 of 8 occasions. Average daily percentage of deviant behavior ranged 3-32%. Total average, 10%.

Comments: Purposes of the project: Devise token reinforcement program which could be used by 1 T in average classroom and determine if token system could be withdrawn gradually without an increase in disruptive behavior by transferring control to T attention, praise, and grades, with less frequent exchange of BU reinforcers. Ratings took at most 3 min. T reinforced approximations instead of demanding perfection from the start. T was enrolled in a psychology class which emphasized operant and social learning principles. (In replication of this study (Kuypers, Becker, and O'Leary, 1968), T received only a short introduction to the basic principles). The reduction in deviant behavior enabled T to spend more time giving individual attention. Work was corrected immediately and returned. T had access to new teaching materials.

O'Leary, K., & Becker, W. C. The effects of the intensity of a teacher's reprimands on children's behavior. Journal of School Psychology, 1969, in press.

O'Leary, K. D., Becker, W. C., Evans, M. B., & Saudargas, R. A. A token reinforcement program in a public school: A replication and systematic analysis. Journal of Applied Behavior Analysis, 1969, 2, 3-13.

Subjects: 7 members of 2nd grade class of 21 children. Lower middle class. California Mental Maturity: IQ mean 95, range 80-115. California Achievement Test, mean 1.5.
Stimuli: Classroom in public school.
Responses: Reduced disruptive behavior: Motor, aggressive, disturbing another's property, disruptive noise, turning around, verbalization, inappropriate tasks.
Consequences: Points. Ratings of 1-10, 4 ratings daily at 1/2 hr. intervals in afternoon. Points placed in booklets on desks. BU candy, dolls, comics, barretts, toy trucks. Ss selected prizes they desired to earn before rating periods.
Procedures: Teacher gave academic instruction, social instruction, praise, criticism, threats. Comments to individuals and group differentiated. Rating based on child's improvement. Rating of 1-5 given when no improvement. Baseline: 8 days over 6 week base period. T handled class in usual manner. Agreement if both Os recorded disruptive behavior during 1 interval. Reliability of measure of disruptive behavior calculated individually each day by dividing number of intervals of agreement by total number of agreements by disagreements. Disagreement: 1 O recorded behavior, other did not. Similar for recording of T behavior. Average reliability: Afternoon, base period, 7 Ss, 88-100%; token period 1, 84-97%; rules phase 68-93%. Morning reliability checks through token period 1 92-99%. P-1: 7 observations over 3 wk. Appropriate behavior rules placed on board. Teacher reviewed rules each morning and afternoon. P-2: T organized program into four 30-min. sessions in the afternoon. 5 observations over 2 weeks. 1 continued. P-3: T praised appropriate behavior, ignored disruptive behavior. Discontinued threats. 5 observations over 2 weeks. P-4: Above continued. Ss received ratings 4 times each afternoon. 1st 4 days, prizes available after 4th rating; thereafter, at end of day. 2 levels of prizes. After 1st 10 days, 6-day periods of reinforcement delayed 2 days. Next 6 days, 3-day delay. 13 observations over 5 weeks. 1st week, E repeated instructions at beginning of each afternoon session. E and T rated children 1st week. P-5: 7 observations over 5 weeks. Token system removed. P-6: Token system reinstated. 1st day, immediate BU reinforcement. Next 4 days, 1 day delay. Remainder, 2 day delay. 5 observations over 2 weeks. P-7: Token system removed. Ss received 1-3 stars for good behavior twice during morning and once during afternoon. Extra stars for restroom break and entering room properly. End of day, permanent gold star for 10 or more stars. Green star for 7-9 stars. Boys' and girls' gold stars counted daily. Group with greater number gold stars received candy end of week. Any child receiving entire week of gold stars received candy. 6 observations over 4 weeks.
Results: Statistical analyses. Token reinforcement reduced disruptive behavior, could be replaced with a variance of token program without increase in disruptive behavior. Token reinforcement was more effective for some Ss than others. Percentage of combined disruptive behavior of 7 Ss during afternoon: 1) 53. 2) 50. 3) 60. 4) 30. 5) 45. 6) 25. 7) 40. (Estimated). P-3: had to be discontinued earlier than planned because disruptive behaviors increased to an impossible stage). Average percentage of combined disruptive behavior of 4 Ss during morning dropped gradually throughout the experiment from 55 to 50 (estimated). Data on individual Ss is included. Possible reasons less dramatic effectiveness than O'Leary and Becker (1967) given. 14 Ss, CAT gained average 1.5 yr. Attendance of 7 Ss: Non-token 86%, token 98%. For generalization from afternoon to morning, T's response to disruptive behavior differed. Ss presumably learned to discriminate that appropriate behavior was reinforced only in afternoon.
Comments: Purpose: Separate effects of classroom rules, educational structure, teacher praise, and token reinforcement. Assess whether token reinforcement used only in afternoon had any effect on morning behavior. Examine extent to which effects continued after experiment. 3 hr. consultant time per week essential.

O'Leary, K. D., O'Leary, S., & Becker, W. C. Modification of a deviant sibling interaction pattern in the home. Behaviour Research & Therapy, 1967, 5, 113-120.

Subjects: 6 yr. old boy and his 3 yr. old brother.
Stimuli: Home environment.
Responses: Reduced assaultive and destructive behavior during interaction with each other.
Consequences: Checks on blackboard for cooperative behavior. Removed for deviant behavior. BU candy, kites, comics, etc.
Procedures: 6 yr. old under psychiatric care for 2 yr., reported extremely hyperactive, aggressive and destructive. Fought with 3 yr. old whenever they were alone. E observed parental attention largely contingent upon high intensity undesirable responses. Three general classes of behavior focused on: Deviant -- kicking, hitting, pushing, name-calling, throwing objects at one another. Cooperative -- asking for toy, requesting other's help, conversation, playing within 3 ft. of one another. Isolate -- absence of verbal, physical or visual interaction between boys. P-1: Baseline. Observations made on 20-sec. rate, 10-sec. rest basis. Total observation time: Approximately 30 min./day. P-2: Experimental. During 1st 2 days, each cooperative response reinforced by M&M candy and word "good". On 3rd and 4th days, E alternately reinforced approximately every 2nd or 4th cooperative response. On 5th and succeeding days, Ss told they would receive an M&M for cooperative responses. Token reinforcement introduced on 5th day. Discussion held with parents often to insure that toys would serve as reinforcers. 12th day: Use of M&Ms discontinued. Number of checks to receive reinforcer increased to permit transition to greater delay of reinforcement and to maintain high cooperative response level. P-3: Baseline. Only O present. P-4: Same as P-2. Mother began to run token system with two additional features: 1) Timeout procedure made contingent upon kicking, hitting, etc. Timeout consisted of isolation in bathroom for at least 5 min. and being quiet for 3 min. before S could come out. 2) On 6th day, stretch-out of token system begun. By end of experiment, reinforcement delay was 3 days.
Results: P-1: Frequency of cooperative behavior divided by total frequency of cooperative and deviant behavior yielded percentages ranging from 39-57, mean 46. This method of representing cooperative behavior percentages used since Es aimed to change topography of whatever interactions occurred. P-2: 85%. P-3: 50%. P-4: Timeout not needed in experimental sessions after day 40. From then on, mother allowed to use timeout at other times. Number of times timeout used outside experimental session fell from 3/day to less than 1 every other day, over approx. 1 mo. 2 days after P-4 began, Ss resumed cooperative response level of P-2. General: Changes during P-2 not due to change in amount of isolate play whereas rise in isolate play during P-4 was probably result of fewer prompts by mother than 1 E for interaction. Topography of interactions had changed markedly. Total cost of token system $10.64.

Olsen, L., & Wagner, B. A proposed token economy program for juvenile patients. Unpublished manuscript, Kankakee State Hospital, Illinois, 1967.

Orlando, R., Schoelkoph, A. M., & Tobias, L. Tokens as reinforcers: Classroom applications by teachers of the retarded. Institute on Mental Retardation and Intellectual Development, 1967, 4(14).

Orme, M. E. J. Behavior modification and transfer in an out-of-control classroom. Paper presented at the meeting of the American Educational Research Association, Chicago, 1968.

Subjects: 18 Ss. 16 Negro, 2 Caucasian. 12 boys, 6 girls.
Stimuli: Curriculum materials.
Responses: Correct answers, hand raising, cooperation, participation in class.
Consequences: -BU gum, balloons, comics, novels, math puzzles, opportunity to write poetry, art lessons, model airplanes, aerodynamics instructions, ship building, science projects.
Procedures: 2 Ts. Each T quite different in approach, results different. Fluctuations in desirable behavior appeared closely linked with Ts' reinforcement rates. Inflated T reinforcement may have corresponded with drop in desirable behavior. Type of lesson and degree to which it lended to reinforcement, effects of pupil reinforcement on T behavior, facilitation of modeling effects of one pupil on another through T reinforcement, effects of disassociating reinforcement function from T, changes in Ts' perceptions of classroom climates, pupils themselves as Ts, and training techniques which facilitate manipulation of reinforcement schedules were variables considered. 2 rooms, A and B. All Ss initially exposed to room B, given 25 points to spend immediately. Then access to room B contingent on target behaviors.
Results: Segments from video tape in pre-treatment, early, middle, and late phases showed that time on task had increased from 50-60% of total time on camera to 80%.

Panek, D. M. Word association learning by chronic schizophrenics under conditions of reward and punishment. Paper presented at the meeting of the Western Psychological Association, 1967.

Paton, R.. & Morita, S. Token reinforcements in the shaping of children's mealtime behaviour. Canadian Psychologist, 1968, 9, 22-27.

Subjects: 20 emotionally disturbed children of normal intelligence.
Stimuli: Dining room.
Responses: Mealtime behavior.
Consequences: Poker chips, BU money.
Procedures: Ss' behavior had to progressively improve in order to obtain money reward. Ss encouraged to save tokens but were allowed to cash them in for real money at end of each week, if desired. Ss not aware they were being rated. Ss were rated 1 wk. and 1 mo. after termination of token reinforcement.
Results: Before study began, average score 89. Latter part of token period, average 124. Seen as improvement of approx. 38% from initial rating. 1 mo. after token reinforcement, average score 90.
Comments: Ss who were well advanced in treatment were ones who obtained greatest token reward and were able to postpone immediate gratification by saving chips until completion of project. Although all staff members had been encouraged to socially reinforce appropriate behaviors, this principle was not clearly understood and consequently not possible to judge how effective social reinforcement was. Author stresses importance of training staff. Tendency on part of some staff to use chips in form of bribe or mild threat.

Patterson, G. A community mental health program for children. Paper presented at BANFF International Conference on Behavior Modification, Alberta, Canada, April 1969.

Patterson, G., Ray, R. S., & Shaw, D. A. Direct intervention in families of deviant children - Oregon Research Institute and University of Oregon. To appear in A. E. Bergin and S. L. Garfield (Eds.), Handbook of psychotherapy and behavior change. New York: Wiley, 1969.

Perline, I. H., & Levinsky, D. Controlling maladaptive classroom behavior in the severely retarded. American Journal of Mental Deficiency, 1968, 73, 74-78.

Phillips, E. L. Achievement Place: Token reinforcement procedures in a home-style rehabilitation setting for "pre-delinquent" boys. Journal of Applied Behavior Analysis, 1968, 1, 213-223. Experiment I.

Subjects: 3 males in home-style community based treatment facility for pre-delinquents: 12, 13, and 14 yr. old.
Stimuli: Home of author and wife. Fairly set schedule, typical of middle-class homes. Various tasks.
Responses: Social, self-care, academic behaviors for entire study. Experiment I: Reduced aggressive statements.
Consequences: Points. BU privileges (e.g., allowance, bicycle, TV, games, tools, snacks, special privileges). Points lost for specified inappropriate behaviors. Tallied on 3x5 in. cards. At end of each week, points traded for privileges during next week. Prices were occasionally adjusted. Stealing, lying, or cheating were very heavily fined.
Procedures: P-1: Baseline. P-2: Ss told what aggressive statements (e.g., "Stop that kind of talk") were, not to make them. Corrective statement by E contingent on S responses. VR because 3-5 sec. allowed to elapse between response and corrective statement. Hoped that speech episode would be finished. P-3: Fine contingent upon response. 3-5 sec. must have elapsed before fine. Not announced to Ss. P-4: No fines. Threats to reinstate fines. Threats not carried out. P-5: Same as P-3, except higher fines.
Results: P-2: Reduced aggressive response in 1 S. P-3: Immediate and dramatic decline in each S. P-4: Aggressive responses gradually returned. P-5: Aggressive responses eliminated. First treat during P-2 had much more effect than rest in P-2.

Experiment II

Subjects: Same as Experiment I.
Stimuli: Same as Experiment I.
Responses: Same as Experiment I, except Experiment II: Cleaning bathroom. Divided into 16 tasks.
Consequences: Same as Experiment I.
Procedures: P-1: Baseline. All Ss instructed to clean bathroom. If fewer than 4 tasks done, Ss had to clean again. P-2: "Manager" S given responsibility. Picked S or Ss to help paid or fined them. Manager reinforced by E. Privilege of manager auctioned weekly. 75% tasks must have been done. P-3: All Ss responsible. Fined when less than 75% of tasks completed. P-4: Same as P-2. P-5: Same as P-3, except heavier fines. P-6: Same as P-2.
Results: P-2, P-4, and P-6 considerably more effective than P-3 and P-5. May have been due to differential contingencies planned by manager for each S.

Experiment III

Subjects: Same as Experiment I.
Stimuli: Same as Experiment I.
Responses: Same as Experiment I, except Experiment III: Punctuality (returning home from school, going to bed, returning home from errands).
Consequences: Same as Experiment I.
Procedures: P-1: If Ss late, E reprimanded. For bedtime, Ss told every 10 min. to go to bed. P-2: Ss fined each late minute. P-1's and P-2's for each type of lateness were arranged this way:

P-1 P-2 (School
P-1 P-2 (Errands
P-1 P-2 (Bedtime)

Results: Only 1 S was usually late on all 3 counts. He improved considerably during P-2 for each response. 2 other Ss showed little change from P-1 to P-2 on all responses except bedtime. They were sufficiently punctual already on school and errands punctuality; bedtime punctuality improved considerably. Improvement was generally to point where Ss were early or exactly on time.

Experiment IV

Subjects: Same as Experiment I.
Stimuli: Pages from self-teaching workbooks in reading and math. Required about 1 hr. to do. Each assignment divided into given equal parts on assignment card to be checked separately. Criterion 78% correct for each part. Summertime.
Responses: Same as Experiment I, except Experiment IV: Doing homework. Assignments described on 3x5 cards.
Consequences: Money, point, late time.
Procedures: Fine equal to total possible points for completion if S did not pick up assignment card. House parents available for help twice during day for 1 hr. P-1: Ss received money for target behavior. Ss could choose to receive money daily or at end of week. P-2: Ss could earn up to 1 hr. of late-time per assignment. Late-time was used on weekends to stay up late. Late-time could be shared or other Ss. P-3: Late-time Ss received could be spent that day or saved. P-4: Ss received points for target behavior. P-5: Same as P-1. P-6: Same as P-4.
Results: No S failed to pick up assignment card. P-1: All 3 Ss chose to receive money at end of week. P-4 and P-6 by far most effective. P-3 compared favorably to other conditions. P-1 and P-5 were relatively poor results. Larger amount of money might have been more effective.

Experiment V

Subjects: Same as Experiment I.
Stimuli: Same as Experiment I.
Responses: Same as Experiment I, except Experiment V: Reduced use of "ain't" as verb.
Consequences: Same as Experiment I.
Procedures: P-1: Baseline. P-2: E interrupted S's conversation, informed of error, suggested alternative, required S to say sentence correctly. Other Ss informed Es of responses Es did not hear. P-3: Same as P-2 except fine levied on each response. P-4: Post check for 5 days after 1 mo.
Results: No effect during P-2. By end of second week of P-3, response eliminated. P-4: Revealed no trace of response.
Comments: After these experiments, Ss self-recorded points and fines equally well. No cheating occurred, perhaps due to heavy fines for this behavior.

Phillips, E. L., & Wolf, M. M. Modification of behavioral deficiencies in adolescents. Paper presented at the meeting of the American Psychological Association, San Francisco, 1968.

Pietsch, D., Morrow, J. E., & Schlesinger, R. The effects of token reinforcers on the behavior of institutionalized female retardates. Paper presented at the meeting of the Western Psychological Association, 1967.

Rabb, E., & Hewett, F. Developing appropriate classroom behaviors in a severely disturbed group of institutionalized kindergarten - primary children utilizing a behavior modification model. Unpublished manuscript, Neuropsychiatric Institute School, University of California, Los Angeles. (Also, American Journal of Orthopsychiatry, 1967, 37).

Subjects: 7 Ss in neuropsychiatric clinic. 5-9 yr. old. Social and communications level 2-5 yr. Paper focuses on 3 Ss who were untestable; staff felt mental deficiency was not primary contributing factor.
Stimuli: Nursery school classroom. Preschool level academic tasks.
Responses: Task attention. Events pen recorder. Coming in on time. Reciting flag salute.
Consequences: Social. Then poker chips. BU candy. Then chips recorded by check marks on card. BU candy or small toy. Later, BU pass to visit elementary classroom for movie, play with animals, etc.
Procedures: Each S experienced different sets of conditions using teacher or token reinforcement.
Results: All Ss showed considerable variability, partially due to varying classroom situation. Major impression: Task attention less variable, tended to be maintained at higher level, during token reinforcement. Teacher attention not consistently related to task attention. Some of data suggest that teacher attention may have hindered independent study. However, teacher attention was not provided systematically. Authors cite possibility of teacher attention being aversive to children who have had such varied experience with adults.

Ray, E. Rehabilitation of disturbed adolescent male retardates. Unpublished manuscript, Proterville State Hospital, California, 1967 .

Reid, E., et.al. Exemplary center for reading instruction. Newsletter, 1968, 2(2). (Also, ERIC ED 18347).

Rimm, D. C., & Mahoney, M. J. The application of reinforcement and participating modeling procedures in the treatment of snake-phobic behavior. Behaviour Research and Therapy, 1969, 7, 369-376.

Ross, D. The relationship between intentional learning, incidental learning, and type of reward in preschool educable mental retardates. Unpublished manuscript, Stanford University, June 1967. (Also, ERIC ED 16348).

Ross, R. R. Application of operant conditioning procedures to the behavioral modification of institutionalized adolescent offenders. Unpublished manuscript, University of Waterloo, September 1967.

Sacks, D. A. Research on the behavior modification of groups. Unpublished manuscript, Florida State University, Tallahassee.

Sapon, S. M. Contingency management in the modification of verbal behavior in disadvantaged children. Paper presented at the meeting of the American Psychological Association, Washington, D. C., September 1, 1967. (Also, ERIC ED 14782).

Subjects: Nursery school socio-economically disadvantaged. Ages: 2.5 and 3.5 yr. Stimuli: Playroom, lunch and art activity room, micro-instruction room (RABbit Room). RABbit Room was controlled environment for observations through glass viewing screen and videotaping. Responses: Verbal behavior. Entering RABbit Room, responding in appropriate manners while in RABbit Room. Established and refined topographical accuracy of responses under simplest controls, regardless of their approximation to stimuli that will eventually be expected to control response in question. Then, already established response brought under control of more realistic stimuli: Responses to E's questions, "where is . . ." Selection of classes of function made on these criteria: 1) Control stimuli for responses present in multiple settings. 2) Productivity on levels of word or syntax. 3) Extendability of function. Consequences: Tokens. Verbal praise. Metal washers, 3/4 in. diameter. Token dispenser. Tokens stored in trains. BU reinforcement devices operated by tokens which provided timed, self-terminating, periods of presentation of audiovisual events: Twinkle box, movie box, slide box, sink with 3 sec. full of water. Procedures: P-1: Initial sessions in RABbit Room, each token spent immediately after received. By 3rd session, complex schedule of token reinforcement, subsequent contingencies for spending. Terminal behaviors were response, "in the twinkle box", etc. Criterion test: Novel reinforcement device (sink), criterion response, "in the sink." P-2: Multiple contingency gain. Target behavior reinforced. Contingency management procedures extended to dining room during meals and to shift of Ss in role of contingency manager. Results: Study was to determine which behaviors are most appropriately shaped in a 1:1 instructional setting and which are inherently group-based. RAB means Requisite Antecedent Behaviors. E uses Skinnerian terms "tact" and "mand" to mean "function of verbal contact of environment" and "commanding change in environment", respectively. Procedures highly effective in maintaining and strengthening verbal behavior as well as in providing opportunities to contract for model-echo behaviors designed to increase articulatory accuracy. Disadvantaged children do not display any striking differences in their response to contingency management procedures successfully applied to middle class children. Strategies involved in RABbit training and subsequent transfer to general, group activities seem sound. Verbal behavior in very young children appears amenable to modification under contingency management. P-1: Criterion behaviors reached with all Ss, mean of 6 sessions. P-2: Transfer of tacting of picture cards by name was made to printed names only.

Sapon, S. M. Engineering verbal behavior. Unpublished manuscript, Office of Economic Opportunity, March 1968. (Also, ERIC ED 25308).

Discusses behavioral engineering approach with verbal behavior in preschool children. Two types: Productive Language (verbal-controlling behavior) and Receptive Language (verbally controlled behavior of giving). Describes individual token reinforcement in group activities.

Schaefer, H. H., & Martin, P. L. Behavioral Therapy. New York: McGraw-Hill, 1969.

Seeks to provide practical help for psychiatric nurses and technicians by use of everyday language and numerous examples and exercises. Describes fundamentals of behavioral techniques, including description and comparison of two of best known models of conditioning -- classical and operant. Chapters include: Behavioral attitude toward mental illness, two models of conditioning, basic schedules, stimulus discrimination, desensitization, record keeping and quantification, record keeping for treatment plans, behavioral techniques in ward routine, treating odd behaviors, retarded psychotic children, geriatric patients, leaving patients. Describes how Patton Hospital experiment began, general characteristics, and assessment of Patton experiment. Exercises at end of each chapter.

In Patton experiment, first step was training all hospital personnel involved. Relevant objections from staff modified plan to make it feasible and realistic. Differences from traditional procedure discussed at length during training period. Nurses' traditional role of merely following doctors' specific instructions needed revision. Nurses learned to take part in deciding exactly which behaviors would be sought and which extinguished. In shifting emphasis from "tender loving care" to patient self-care, nurses urged to consider how much more loving, if not more tender, it would be to see patients assume responsibility for their own care, since this is what would be expected from them once they were discharged from hospital. Early in the course, staff considered reinforcers available for patients. Initially, white, red, and blue poker chips used as tokens until possible to install automatic equipment such as turnstiles in dining room, timers on TV, food and toiletry dispensing automats, and automatic drawer openers. Brass tokens then used. BU food, beds, going out doors, visitors, cigarettes, TV, various luxuries and minor privileges.

Course of instruction in behavioral techniques lasted 18 wks. Included not only fundamentals of operant conditioning, but also lectures and discussions covering simple behavioral experiments and description of research work and teachings of Pavlov and Skinner. All patients diagnosed chronic schizophrenic, were hospital-habituated, had no organic brain damage, had prognosis of low hope for therapeutic success, and were able to function on open ward. With at least 70 patients for 24 hr./day and at most 5 staff members on duty at one time, some kind of grouping had to be arranged which would make close attention possible for all patients. To accomplish this, 3 groups were used in each ward: Orientation---60%, therapy---20%, ready-to-leave---20%. Patients in orientation group provided with only minimal requirements that human dignity and common sense require. Patients in therapy group had more comfortable surroundings. Members of ready-to-leave group were provided with private room and special privileges. In every group, patients paid for necessities, luxuries, and privileges. Grouping technique provided high motivation for patients to take more and more responsibility for themselves so that they might work up to next group until ready for release. "Good" behaviors which received reinforcement differed for each patient. Patients were not coerced or continually reminded to do something. Since goal of program was to make patients independent, were gradually weaned from artificial support of always being paid tokens for every good behavior. Friendly praise, extra privileges, and approval of staff and patients replaced tokens at every opportunity. Patients normally found life in orientation group so aversive that within only a month or two, behavior sufficiently changed to warrant inclusion in therapy group. In second group, patients received most attention and most intensive operant conditioning possible. Decisions for reassignment made by ward's charge nurse in consultation with nursing personnel. Leave planning made as soon as patient moved into therapy group. Once in therapy group, patient had maximum of five months to reach discharge stage. Two of these five months generally spent in ready-to-leave group. If at end of three months in therapy group patient had not shown that he was willing or able to face living outside hospital, returned to orientation group.

Part of program was daily staff session in which patients' cases and treatment problems were discussed. Patton experiment was still in progress in 1969; no plans for discontinuance. Patients being transferred into program from other wards and discharged from ready-to-leave group; rate is approx. 9% per mo. No definitive data available to make possible totally valid assessment of program, but, considering that all patients had at one time been labeled "incurable", percentages for discharges and readmission significant. Readmission rates for 248 discharge cases were approx. 16%. During same period, average readmission in all public mental hospitals was estimated at 35-40%.

Schalock, R. L., & Walker, K. A. An attempt to promote behavioral change in paired-schizophrenics by reinforcing associative behavior. Psychological Reports, 1967, 21, 904.

Subjects: 18 male, 18 female, chronic hospitalized schizophrenics. 19-55 yr.
Stimuli: S paired with another S.
Responses: Association as a pair.
Consequences: Points, BU scrip.
Procedures: Test data and staff evaluations used to divide Ss into 2 groups: Better functioning patients and those functioning at a level judged more regressed. One S from each group was selected for each pair. 18 pairs were randomly divided into 3 groups. Group 1: Evaluated daily on five-point association rating scale by three ward staff, paid scrip on basis of amount of association. Group 2: Evaluated daily, paid scrip on basis of amount of associating. Control: Evaluated daily, received no scrip.
Results: Initially, some of Ss in groups I and II associated when paid to do so, but almost all pairs stopped associating as the study progressed. In addition, except in a few cases, there were more negative than positive changes between baseline and post-evaluation on tests used.

Schmidt, P., Miller, M., Zimmerman, J., & Stuckey, T. Training the hard-core disabled. Unpublished manuscript, Indianapolis Goodwill Industries, August 1967.

Schmitt, D. R., & Marwell, G. Stimulus control in the experimental study of cooperation. Journal of the Experimental Analysis of Behavior, 1968, 11, 571-574.

Subjects: 6 pairs, freshmen, sophomores; 2 pairs male; 4, female.
Stimuli: Plungers, lights, counters.
Responses: Cooperative reponses per min. Criterion: More than 3 sec. but less than 3.5 sec. between leader and follower responses.
Consequences: Accumulated earnings of pair indicated by counter. BU pennies. Light flash signalled.
Procedures: P-1: Time out and response lights. P-2: Timeout lights. P-3: Response lights. P-4: No lights. P-5: Timeout and response lights. L-Lindsley task. M-modified task. L defined response: Ss pulled plungers within 5 sec. of each other. Individual response defined: S pulled plunger twice in row without either pull being part of team response, followed by 2.5 sec. TO. Also, 5 sec. TO after reinforcement in L. M - TO after individual response 2.5 sec. TO after reinforcement on M was 2 sec. Ss' pulls indicated by response lights. 2 sessions on L and 2 on M, half working first on L, half on M.
Results: L - cooperative response relatively high under P-1, P-2, P-5; moderately high in P-3; moderate on P-4. M - rates near zero in P-2, P-4; relatively high in P-1, P-5; moderately high in P-3. Thus, achievement of high rates in M required social behavior. Further data obtained on intervals between leader and follower pulls further substantiated this.

Schwartz, L. Modifications of the social relationships of psychiatric wards through the use of operant conditioning. Dissertation Abstracts, 1967, 28(3-B), 1174.

"This study was undertaken to add to the general knowledge regarding the development of cooperation between pairs of schizophrenic subjects through the utilization of operant conditioning. Three groups of subjects were used: 30 pairs of reactive schizophrenics 30 pairs of process schizophrenics, and 30 pairs of student nurses in their psychiatric affiliation as controls. Each pair of subjects was initially conditioned on a Fixed Ratio (FR) 1 schedule for a period of 10 minutes. Following this, the subjects were randomly placed on a Fixed Ratio 1, Fixed Ratio 5, or Fixed Ratio 10 schedule for the remaining twenty minutes of the first session and for thirty minutes on each of the next following four days. The reinforcement for half of the population was cigarettes and points or scores for the other half whenever they simultaneously or synchronously (within 2 seconds of each other) responded by activating a push button. Earned reinforcements which where in full view of the subjects were made available at the end of each session. The subjects' verbalizations were recorded during the first, third, and fifth sessions.

"The reactives and the controls, as hypothesized, were conditioned while the process group showed only a trend in that direction because half the process group was uncooperative; this latter result was thought to be due to negativism or internalized fear of censure. As the schedules changes from Fixed Ratio 1 to Fixed Ratio 10, there was a decline in the total number of cooperative responses for each group. This may reflect action to frustration necessitated by a ratio schedule where only every fifth or tenth response was rewarded. An alternative explanation of the results may be that there was insufficient shaping of behavior since the method of approximation was not used. The hypothesis of a significant difference in regard to class of reinforcement was statistically supported with cigarettes having the greater potency. A significant interaction existed between schedules and class of reinforcements. This was probably due to an artifact of sampling.

"Among all groups, there was a significant decline over the sessions in the frequency of verbalizations with direct reference to the operant-conditioning task. This finding was explained primarily on the basis of the opportunity to discuss task between trials. General-oriented verbalizations increased for the process group; however, they consisted of autistic and self-oriented comments. The controls also increased their frequency of general-oriented comments probably based on intercommunications. Although there was a significant increase in the number of pairs of subjects who did not verbalize at all over the span of the experiment, this was significant only for the controls. It was explained on the basis of boredom or personal inconvenience, as well as their early understanding of the requirements of the experiment.

"This study resulted in several significant findings: First, the reactive schizophrenics conditioned at a rate which was quite similar to the controls, while the process schizophrenics showed no statistical significance in their conditioning rate; second, cigarettes were found to be more potent reinforcers than the scores; third, there was a decrease in the rate of cooperative responding as the schedules changed from a Fixed Ratio 1 to a Fixed Ratio 5 to a Fixed Ratio 10; and fourth, linguistic communications were oriented toward button pushing on the first day. This was followed, on subsequent days, by a decrease in task-oriented comments and an increase in both general comments and absence of verbalizations."

Scoles, P. E., Jr., & Henderson, J. D. Effects of token reinforcement on the social performance of psychotic men. Unpublished manuscript, Spruce House, Horizon House, Inc., Philadelphia, 1968.

7 Ss in token behavioral environment (Spruce House) participated in study in which contingent token reinforcement was accorded for social interaction at 3 levels for 6 wk.; reinforcement suspended during 7th wk. and reinstituted during 8th, 9th, and 10th wk. Hypothesized that token reinforcement would result in increases in reinforced social behaviors; that social behaviors would be attenuated when reinforcement suspended; and that social performance would recover to pre-suspension level when reinforcement reinstituted. Under contingent token reinforcement, significant increases or increases approaching significance found on most of social variables. When reinforcement suspended, decrements resulted, most of which attained or approached statistical significance. When reinforcement reinstituted, significant increases in social performance on all variables studied. Observed that suspension and reinstitution of reinforcement had general activating effect on performance within token environment. (From paper summary).

Shah, S. A. Preparation for release and community follow-up: Conceptualization of some basic issues, specific approaches and intervention strategies. Unpublished manuscript, Institute for Behavioral Research, Silver Springs, Md., January 1967.

Silva, J. M. An evaluation of the research published in the area of operant conditioning using tokens. Unpublished master's thesis, State University of New York at Stony Brook, 1969.

Silverman, R. E. Response to varying levels of conditioning rewards. Annual report, June 30, 1968, New York University. (Also, ERIC ED 20803).

Skinner, B. F. Teaching science in high school -- what is wrong. Paper presented at the meeting of the American Association for the Advancement of Science, New York, December 29, 1967. (Also, ERIC ED 20140).

Sletten, I. W., Hughes, D. D., Lamont, J., & Ognjanov, V. Work performance in psychiatric patients: Tokens versus money. Diseases of the Nervous System, 1968, 29, 261-264. 76

Subjects: 12 male Ss, 8 female Ss. Mean 44 yr. old, range 22-55. 17 schizophrenics, 2 manic depressives, and 1 with personality disorders.
Stimuli: Ward environment.
Responses: Work in hospital jobs.
Consequences: P-1: Tokens. BU preferred activities. P-3: Money.
Procedures: Ss were observed and interviewed to determine HPB's. After observation period but before P-1, 8 Ss assigned for 4 wk. to groups receiving tokens (A)twice a day (B) 3 times a wk. (Mon., Wed., Fri.). A 2 wk. "off" period followed. Then, same Ss assigned to opposite groups for 4 wk. A 2 wk. "off" period followed. P-1: Token reinforcement for hospital jobs. Individual basis. Minimum work period of 4 hr. Tokens given 3 times per wk. P-2: "Off" period. P-3: Money reinforcement. No minimum work period. Payment at end of wk. P-4: "Off" period.
Results: Ss generally objected to having to work for tokens in order to get privileges already possessed. No S objected to money reinforcement. No significant difference between P-1 and P-3. No significant difference between average of P-1 and P-3 and P-2 and P-4. P-1 and P-3 were significantly better than final "off" period. No significant differences between A and B and P-2 and P-4. A and P-3 were significantly higher than P-4.
Comments: Experimenters favored use of money over tokens because of difficulty of studying HPB's, regular monitoring of tokens earned and spent. Ss were also reluctant to participate in token economy. Lack of funds is problem in using money as reinforcer.

Sloane, H. N., Jr., & Macaulay, B. D. (Eds.) Operant procedures in remedial speech and language training. Boston: Houghton Mifflin, 1968.

Spradlin, J. E. A demonstration program for intensive training of institutionalized mentally retarded girls. Progress report, January 1967, Parsons State Hospital and Training Center, Parsons, Kan., and Bureau of Child Research, University of Kansas, Contract Nonr MR 1801B67.

Spradlin, J. E. A demonstration program for intensive training of institutionalized mentally retarded girls. Report, July 1, 1968 through June 30, 1969, Bureau of Child Research, University of Kansas, Lawrence, Kan., Project Nonr 64999-03-68.

Staats, A. W. A general apparatus for the investigation of complex learning in children. Behaviour Research & Therapy, 1968, 6, 45-50. (a)

Subjects: Children.
Stimuli: Learning tasks of all types.
Responses: Task responses.
Consequences: Marbles. BU trinkets, edible mixture, toys.
Procedures: Describes simple, easy to apply, generally applicable and effective apparatus and reinforcement system which enables research to be run over long period with complex learning tasks and without use of deprivation or aversive control. Stimuli displayed through window. Correct responses reinforced. S deposits reinforcer in 1 of 5 places which will produce a trinket edible mixture (immediately) or help earn one of 4 toys hung above 4 deposit tubes. The tubes hold from 10-150 marbles. When tube is full, S receives toy above that tube. Earned toys stored away from S until session over. Adaptation procedures to the apparatus, suggestions for automation, types of research that can be conducted with the apparatus explained.

Staats, A. W. Replication of the "motivated learning" cognitive training procedures with culturally deprived preschoolers. Technical Report No. 59, August 1968, Wisconsin Research and Development Center for Cognitive Learning, Madison, Wis. (b)

Staats, A. W. Development, use, and social extensions of reinforcer (motivational) systems in the solution of human problems. In Conference proceedings: Progress in behavior modification, Youth Development Center, University of Hawaii, 1969.

Staats, A. W., Minke, K. A., Goodwin, W., & Landeen, J. Cognitive behavior modification: "Motivated learning" reading treatment with subprofessional therapy-technicians. Behaviour Research and Therapy, 1967, 5, 283-299.

Subjects: 18 experimental and 18 control Ss. Poor readers. Average age 14 yr., 6 mo. Average IQ 74. 7 of each group were in classes for educable mentally retarded.
Stimuli: 100 words from SRA reading list. Materials became progressively more difficult. Difficulty increase: 1.2 - 3.5 grade level.
Responses: Reading responses: Vocabulary, oral reading, silent reading, vocabulary review.
Consequences: Tokens. Blue, yellow, and red with different values. Bonus system allowed earnings never to fall below $.20. Token acquisition plotted. BU store items.
Procedures: 18 Ss divided into 3 subgroups. L -- lowest --- mean percentage 43.2 on SRA words before. Mean IQ Lorge Thorndike 71.9, 50-91. M -- middle -- 69.2 SRA. Mean IQ 74.2, 53-94. H --- high -- 79.0 SRA, IQ 79.9, 66-92. Mean of 593.5 unknown words presented. 9 adult volunteers and 9 high school seniors were trained as instructional technicians. Many Ss answered standard tests randomly so easier tests and extrinsic reinforcement were used. (2¢ for each correct answer). Various colors of reinforcement tokens given for various reading responses.
Results: Percentage of words that could be read prior to training 22-81%. Reading rate accelerated slightly during training. Behavior of Ss was appropriate throughout. 70.9% unknown words maintained after training. Experimental Ss increased in ability to read SRA words significantly over control. Standard tests results did not show differences. Use of extrinsic reinforcement for test taking behavior increased scores on tests.
Comments: Accounts for lack of differences on standard pre- and post-test Fault of SRA materials, test, test-taking ability of Ss. Necessary to supervise therapy-technicians.

Staats, A. W., Minke, K. A., Goodwin, W. L., & Landeen, J. Motivated learning reading treatment with additional subjects and instructional technicians. Technical Report # 22, 1968, Wisconsin Research and Development Center for Cognitive Learning, Madison. (Also, ERIC ED 15110).

Staats, A. W., Van Mondfrans, A. P., & Minke, K. A. Manual of administration and recording methods for the Staats "motivated learning" reading procedure. Technical report, April 1967, Wisconsin Research and Development Center for Cognitive Learning, Madison, Wis.

Explanation of research done in area of remedial reading and summary of features of program. Program used with students retarded in reading, applied on 1:1 basis by nonprofessional personnel. Final selection of Ss for participation in studies made on basis of 100 item word recognition test. Included junior high and elementary students, emotionally disturbed, educable mentally retarded. Most Ts were adult volunteers, high school seniors, full time personnel from culturally deprived areas. All paid salary. SRA reading laboratory materials typed in special manner for program. Data sheets for each lesson. Charts for point value accumulated each day. Lesson phases consisted of individual work, reading, silent reading, comprehension. All explained in detail. Yellow, blue, and red tokens given for different kinds of responses. All tokens delivered at end of each phases. Vocabulary review presented every 20 lessons. Tokens were worth points, BU money, except for some studies now in progress in which points are only BU reinforcers. Ss work for specific objects. Any verbal or nonverbal means of indicating disapproval was discouraged. Bonus system allowed earnings never to drop below 20¢ or 200 points. 1/2 yr. actual reading time daily. Total session, 1 hr. When lesson split across 2 sessions, 2 data sheets. Findings showed that Ss' rates of learning increased as training progressed. Standard reading achievement test did not show difference, possibly due to behavior not transferring to test taking, test too difficult, or training materials not transferring to test. Ss did cover large amounts of reading material, learned to read new words individually and in context, retained good proportion of what learned. Concise list of procedures, sample lesson, data sheet included.

Stayer, S. J., & Jones, F. D. Ward 108: Behavior modification and the delinquent soldier - Department of Psychiatry and Neurology at Walter Reed General Hospital. Paper presented at the Behavioral Engineering Conference at Walter Reed Hospital, 1969.

Steffy, R. A. Service applications: Psychotic adolescents and adults--treatment of aggression. Paper presented at the meeting of the American Psychological Association, San Francisco, September 4, 1968.

Subjects: 9 patients, modal age: 20. On ward with 70 patients, modal age: 50. Mean hospitalization: 20 yr. Aggressive, were disrupting token economy system being used with severely regressed patients.
Stimuli: Ward environment.
Responses: Reduced aggression.
Consequences: Tickets, points.
Procedures: Contracts developed with each of 9 younger patients to link critical behavior to available reinforcers in ward. Gradually, individual contracts replaced by generalized contracts for various stages of development. Access to higher stage contracts was at laundry, industrial therapy, hairdressers, mending room, nurses' residence, diet kitchen, and ironing room. Minimum work time required for signed ticket, 2 hr. (except for industrial therapy--2.5 hr.). Patients stated one day early where they would work. Tickets rated fair (worth 0 point), good (worth 1 point), and excellent (worth 2 points). Tickets signed by patient's work supervisor at end of each half-day. Maximum tickets earned in week: 10. If number of points earned in week was 20, bonus of 2 added. Any gross behavior disturbance requiring confinement on closed ward cancelled contract. Points charged for privileges and purchases (e.g., dances, shopping, lipstick) and bad behavior (e.g., breaking windows, failure to make bed, possession of matches). Some patients carried validation cards to be signed by any staff member witnessing positive behavior or temper outbursts. Cards returned to ward each day for tallying.
Results: Of 9 Ss who committed acts of violence in hospital, 7 improved markedly. Cases of 2 Ss reported in detail. In both cases, deprivation or threat of deprivation necessary before positive reinforcers took effect.

Steffy, R. A., Hart, J., & Craw, E. Behavior modification treatment with young adult aggressive patients: A case report. Paper presented at the meeting of the Ontario Psychological Association, Kitchener, Ontario, February 3, 1967.

Subjects: See Steffy (1968).
Closed ward area served as powerful incentive. Any unmanageable or dangerous acts and/or certain number of demerits required return to closed ward. Nursing staff became closely knit team. Staff made special effort to reinforce verbally. Considerable time given to patients. Paper gives case history of 1 S: Psychopathic, self mutilating, ring leader female; 7 yr. hospitalization. Upon admittance to behavior modification project, tics and comments about distress ignored. Comments that S felt better reinforced verbally and by privileges. Within 2-3 wk., distress remarks and tics virtually disappeared. Self mutilation acts and work behavior next designated target responses.
Results: Worked 40 hr./wk., had 2 mutilation episodes during 6 mo. treatment. 7 mo. after report, no further self mutilation of S in hospital. Procedures to improve impulse control and increase frustration, tension, and boredom tolerance are explained.

Steffy, R. A., Hart, J., Craw, M., Torney, D., & Marlett, N. Operant behavior modification techniques applied to a ward of severely regressed patients. Canadian Psychiatric Association Journal, 1969, 14. (a)

Subjects: 34 severely regressed and aggressive female patients considered management problems. Ages: 18-74, mean 51. Approximately 1/2 of patients on ward were considered periodically violent. 19% of ward could correctly answer set of 6 general orientation questions. 16 Ss were feeding problems.
Stimuli: Closed ward for about 74 patients.
Responses: Report to dining room for meals. Refrain from aggressive outbursts, annoying rituals, and loud verbalization during meals. Change clothes before bed. Retire between 8 and 9 p.m. Refrain from psychotic rituals that would interfere with routine or other patients' sleep. Amount of food eaten, outbursts, aggressive acts on ward, and 5 bedtime criteria were recorded. Measured by tallying. Psychotic Reaction Profile (PRP), 3 times throughout yr. Minimal Social Behavior Skill (MSBS), 3 times.
Consequences: Tokens, social reinforcement. Loss of token if S showed any inappropriate behavior throughout night or failed to dress appropriately in morning.
Procedures: P-1: Nurses' roles: 1) Serve food. 2) Tally various characteristics of mealtime behavior. 3) Forcibly evict patients when argumentative or violent. Access to dining room restricted to 20 min. period. All sources of food other than at mealtime eliminated. P-2: Initially each S had to procure, hold, and present token for admission to dining room. Gradually, time between token delivery and entry to dining room increased to 30 min. After meal time procedure stabilized, red token was hung on nail inside S's room immediately after retirement. Tray of treats circulated during day for those who had not lost red token during night.
Results: MSBS: Pre-treatment: Mean 20.91, SD 8.35. During treatment: Mean 23.44, SD 7.02. Post-treatment: Mean 23.43, SD 7.06. PRP: Withdrawal: Mean 27.56 - 22.94. Thinking disorder: Mean 9.97 - 6.17. Paranoid belligerence: Mean 10.94 - 6.37. P-1: Within 3 wk., routine was established in which only 5 min. allowed for entry into dining room. 16 Ss eating in dayroom. Approximately one person per meal evicted. P-2: Within day, nearly all Ss were eating in dining room. Rate of 2 patients deprived per meal rapidly achieved. After block 14 (block=3 wk.), 6 Ss allowed to collect and return token immediately. Average number of patients missing meal (unusually high during block 14) returned to approximately 2 per meal. Level maintained for year beyond data reported, and subsequent year without tokens. Steady decline in evictions to one per day. Average number of Ss per day cooperating with bedtime routine after 4 mo. was about 28. Before project, average number cooperating was about 18. 28% of Ss were able to be maintained in places other than hospital after project.
Comments: Toward final 3 mo. of yr., industrial therapy program developed. Project not reported here.

Steffy, R. A., Hart, J., Craw, M., Torney, D., & Marlett, N. Operant behavior modification tecnhiques applied to a ward of severely regressed psychotic and behavior problem adolescent patients - Lakeshore Psychiatric Hospital. Paper presented at the meeting of the Canadian Psychiatric Association, Quebec, June 17, 1969. (b)

Taber, J. I., Frumkin, P. M., & Babcock, B. C. An application of contingency management procedures to the problem of intellectual retardation in disadvantaged children. Unpublished manuscript, Case Western Reserve University, April 1967.

Subjects: 2 groups of 10 each. Severely retarded 7-9 yr. olds. Number of experimental Ss increased to 11 while control Ss dropped to 7. One of experimental Ss dropped out after 1st wk.

Stimuli: Experimental Ss -- programmed curriculum materials. Control Ss -- curriculum presentation at T's discretion.

Responses: Correct responses to stimulus materials.

Consequences: Chips. Immediate reinforcement. BU small food items, clothing, toys.

Procedures: Ss exchanged tokens at end of each session. Expected to "buy" own lunch. Ss in control group received lunch everyday regardless of progress and each S given 1 toy at end of morning on basis of random drawing. Same range of toys available to both groups. In experimental group, Ts were 4 graduate psychology students; Ts for control were 3 experienced teachers and 1 experienced T helper. Ts separated to avoid discussion of technique used in experimental group. Each group met separately at same time and under similar environmental conditions. Experimental group met in room divided into arithmetic, psychomotor skills, writing, reading, and play areas. Groups of 2-3 Ss worked in various areas. Every 25 min., Ss rotated. After 3 study sessions, Ss engaged in cooperative play during which Ts rewarded desirable behavior with poker chips. Later in morning, 20 min. story time during which Ss individually quizzed and rewarded for remembering materials. During lunch, Ts talked with Ss and occasionally rewarded good manners and meaningful conversation. After lunch, 15 min. period for "store". When Ss worked with curriculum materials, Ts dispensed tokens on VR schedule for correct studying responses. Even though Ss worked at individual rates, each received immediate reinforcement. Token always accompanied by verbal reinforcement. Blue chips to buy lunch; white, store; red, time in play area. White also used to reinforce correct responses during use of tachistoscope. Ss told T what color they wanted to earn. Control group: Taught by traditional teaching methods.

Results: Experimental group -- noise level much higher, table manners much worse, especially at 1st part of project. Noise discouraged when interfering with studying. Aggression discouraged by use of timeout corner, fines (loss of tokens), and verbal reproof. Misplacing and hoarding tokens problem with 1 S. Tests administered at beginning and end of 6 wk. study.

	Before		After
Stanford Binet--mean			
Experimental	74.3		76.5
Control	80.1		83.1
Attendance		Throughout	
Experimental		88.3%	
Control		89.9%	
W.R.A.T.--Math--mean			
Experimental	1.0		1.7
Control	1.4		1.6
W.R.A.T.--Reading--mean			
Experimental	.7		1.4
Control	.8		1.5

Frumkin-Taber Achievement Test--Handcraft--mean		
Experimental	68.0	72.0
Control	71.0	72.0
Frumkin-Taber Achievement Test--Reading--mean		
Experimental	47.9	60.5
Control	47.5	57.6
Bender-Gestalt Scores--mean (Low score indicates good performance).		
Experimental	10.2	9.1
Control	7.9	6.3

Trend is obvious; proportionately more children in experimental group improved on 5 of 7 measures. On 2 measures, (Stanford-Binet and W.R.A.T. reading) improvement same.
Comments: In project using above operant procedures over longer period of time, Es would need to rely on automatic teaching devices.

Tharp, R. C., & Wetzel, R. A. Behavior modification in the natural environment, 1969, in press.

Thorne, G. L., Tharp, R. G., & Wetzel, R. J. Behavior modification techniques: New tools for probation officers. Federal Probation, 1967, June. (Reprint)

Subjects: Juvenile delinquents. 4 case studies.
Case 1: BU telephone privileges and weekend dates contingent on school work. Token: Note from school. Ts taught parents and other Ts new child management techniques. All were sub-professionals. All techniques could easily be taught to probation officers. "Probation officers should make use of aversive controls, which temporarily reduce misbehavior, and then build treatment or rehabilitation plan around positive controls that would teach new socially acceptable behaviors."
Case 2: BU money, praise, new bicycle contingent on daily non-destructive behavior at home. Points for successful completion of chores at home accumulate toward purchase of bicycle. Doing homework at home rewarded.
Case 3: Not playing with matches reinforced by star on chart. BU praise, access to T.V. Wk. of success reinforced by small amount of money. Response costs for playing with matches.
Case 4: Carefully devised schedule. Completion of chores, obedience (e.g., getting home at night on time) reinforced by money. Response costs: Loss of money, restricted time on use of family car. Points also could be earned for chores and responsibilities towards purchase of car insurance premium.
Results: All behaviors were changed by alteration of environmental consequences. Much evidence that uncooperative parents can defeat productive change.

Thorne, J. J., Thorne, G. L., Wetzel, R. J., & Tharp, R. G. An experiment in residential management of delinquent girls. Unpublished manuscript, University of Arizona, 1967.

Tyler, V. O., Jr. Application of operant token reinforcement to academic performance of an institutionalized delinquent. Psychological Reports, 1967, 21, 249-260. (a)

Subjects: Large, muscular boy, 16 yr., juvenile delinquent. WISC IQ 108. Committed after stealing 4 cars. "Con artist" throughout study.
Stimuli: Academic tasks.
Responses: Academic functioning in school room. Daily academic effort rather than performance (lack of tests). Performance weekly. Daily grade sheet.
Consequences: Tokens. Poker Chips. Receipt given upon payment. Reinforced at end of each day, maximum earnings 30; end of wk. for performance. BB mattress for 24 hr., wear own clothes instead of institutional. Cigarettes, candy, gum. Christmas pass.
Results: After 4 wk., improvement in school. Relatively poor in English (C average). Extra bonus every wk. for C+ or better in English. Bonus for A- in science. After 6 wk., more favorable attitude. 10th wk., continued concern. Weekly grade average showed fine improvement, then declined. For 3 wk. after Christmas pass, decline. Then gradual increase in grades, decline when taken off system. Formal school grade records showed grade point average increase from .60-2.00 high school to 2.75-3.00 on system. T's comments suggested no developing positive bias towards S and suggested disapproval of reinforcement system but also feeling that S improvement due primarily to system; i.e., rater bias opposite S's behavior.
Comments: Number of contaminating variables cannot be sorted out of present data. Author very theoretical in determining behavior causality, but no alternative in absence of definitive data. Author comments on relation of this study to programmed learning study, generalization to parole situation.

Tyler, V. O., Jr. The impact of token reinforcement on the academic performance of delinquent boys. Paper presented at the meeting of the Western Psychological Association, San Francisco, 1967. (b)

Tyler, V. O., Jr., & Brown, G. D. The use of swift, brief isolation as a group control device for institutionalized delinquents. Behavior Research & Therapy, 1967, 5, 1-9.

Tyler, V. O., Jr., & Brown, G. D. Token reinforcement of academic performance with institutionalized delinquent boys. Journal of Educational Psychology, 1968, 59, 164-168.

Ullman, L. P., Krasner, L. A psychological approach to abnormal behavior. Englewood Cliffs, N. J.: Prentice Hall, 1969.

Covers: Definitions of abnormality, problems associated with those definitions, diagnostic labeling, principles of scientific method, principles of learning, formulation of abnormal behavior, historical introduction to abnormal psychology (nineteenth century, Freud, roots of behavior modification), socio-psychological model for abnormal behavior, diagnostic practices, and behavior modification practices for the following types of abnormal behavior: hysterical and dissociative behaviors; phobic, obsessive-compulsive, and other psycho-neurotic behaviors; transient situational personality disorders; psycho-physiological reactions; schizophrenic behavior; affective reactions and suicide; paranoid behaviors and personality disorders; sociopathic personality disturbance; sexual behavior; addictive behavior; children's behavior; retardation; and brain disorders. Many behavior modification treatment examples use token reinforcement.

University of Washington, Experimental Education Unit. Bibliography: Research and applications of behavioral modification and educational approaches with exceptional children. Unpublished manuscript, Utah State University, Department of Special Education, May 1967.

Bibliography of 265 references on general behavior modification with exceptional children. References are not specific to token cultures and include material on exceptional children only. Dates of materials published range from 1951-1967. Whitlock and Bushell (1967) is the only reference repeated in UMREL bibliography (1969).

Vail, D. J. Mental Health Medical Policy Committee: Recommended guidelines for Learning-Therapy Programs (such as Operant Conditioning, Respondent Conditioning, Behavior Modification, and similar programs hereinafter referred to, for purposes of these guidelines, as Learning-Therapy Programs). Unpublished manuscript, Mental Health Policy Committee, 1967.

Van Mondfrans, A. Learning principles and procedures applied to remedial reading by normal and educable mentally retarded 4th, 5th, and 6th grade children. Madison, Wisc.: Wisconsin Research & Development Center for Cognitive Learning, 1968.

Vogler, R. E. Possibility of artifact in studies of cooperation. Psychological Reports, 1968, 23, (1), 9-10.

Wagner, B. R. Essential features of a behaviorally oriented hospital program. Paper presented at a Rehabilitation Department Seminar on Behavior Modification held at Chicago State Hospital, February, 1967.

Wagner, F. R., Finkel, P., & Paul, G. A proposed experimental ward for untidy patients. Unpublished manuscript, Kankakee State Hospital, Illinois, 1967.

Walker, H. M., & Mattson, R. H. Identification and treatment of social-emotional problems. Interim Report, May 1967, University of Oregon.

Watson, L. S. Application to operant conditioning techniques to institutionalized severely and profoundly retarded children. Mental Retardation Abstracts, 1967, 4(1), 1-18.

Weick, K. E., & Prestholdt, P. Realignment of discrepant reinforcement value. Journal of Personality & Social Psychology, 1968, 8(2, Pt. 1), 180-187.

Weiner, R., & Cuyett, I. Behavioral rehabilitation of chronic schizophrenic patients: Two year progress report on Hospital Improvement Project Cottage, · rch 31, 1969, Dixmont State Hospital.

West, J. R. Token economics and their relationship to basic economics. Paper submitted in partial fulfillment for the degree of Ph.D. in the Department of Human Development, Kansas University, July 1969.

Explanation of historical developments, mechanics of token economies, rules dealing with behaviors (Ayllon & Azrin, 1968), rules dealing with reinforcement, rules dealing with measurement, comparison of established token economies in academic, institutional settings, analysis of BU reinforcers, economic considerations, implications for token economies. Essentially a review of state of token economies and present uses. 57 entries in bibliography. Good reference source, although no original experimental data presented.

Whitlock, C., & Bushell, D. Some effects of "back-up" reinforcers on reading behavior. Journal of Experimental Child Psychology, 1967, 5, 50-57.

Subjects: 6 yr. old girl.
Stimuli: Reading stimuli presented on plain 3 x 11 in. cards.
Responses: Reading, measured by six digit electrical counter.
Consequences: Counter advancing. Counter disguised in a clown. BU notebook, letters, tickets for friends. Each item had price shown on counter. When counter reached that number, S could buy item if desired.
Procedures: P-1: 6 sessions. Counter advanced 1 number for each correct response. S tutored at beginning of each session. P-2: Baseline, experimental conditions removed. P-3: Reinstatement of experimental conditions. P-4: BU reinforcers introduced. P-5: Counter continued to operate as usual but BU reinforcers removed. P-6: BU reinforcers reintroduced with some modification in prices.
Results: P-1: First 3 sessions, rate of response below 6 sentences per min. For next 3, 8.7. P-2: 7.0 sentences/min. dropped to 1.0 by last session. P-3: Response rate increased for first 2 sessions, then dropped to rate similar to P-1. P-4: S made 20 correct responses to buy notebook cover and stopped at every 5 after that to buy a letter. S decided to read until enough points earned to buy 2 tickets to bring friends to reading session. Response rate increased to 9.3 sentences/min. by 24th session. P-5: Response pattern characteristics of extinction resulted. P-6: In final session, S correctly read 130 sentences at rate of 9.9 per min.

Winkler, R. Healthy and unhealthy economics. Paper presented at the meeting of the Australian Psychological Society, Brisbane, August 1968. (a)

Winkler, R. Management of chronic psychiatric patients by a token reinforcement system. Paper presented at the meeting of the Australian Psychological Society, Brisbane, August 1968. (b)

Wisconsin Research & Development Center for Cognitive Learning. Replication of the "motivated learning" cognitive training procedures with culturally deprived preschoolers. Unpublished manuscript, University of Wisconsin, August 1968.

Wolf, M. M., Giles, D. K., & Hall, V. R. Experiments with token reinforcement in a remedial classroom. Behaviour Research and Therapy, 1968, 6, 51-64.

Subjects: 16 Ss (15 6th grade, 1 5th grade) in each group in fall, dropped to 15 by spring. All Ss scored at least 2 yr. below norm on SAT reading test. Median IQ 88, range 73-104. Median SAT reading grade level, 3.4; total battery median, 3.6. Median 6 week report card grade average from previous yr: 4.1 (A=1, F=5). Low income. Control group went to regular school, no remedial program.

Stimuli: Curriculum materials in reading, arithmetic, language.

Responses: Homework assignments and remedial work completed in remedial classroom. All target behaviors and reinforcers individualized.

Consequences: 6 wk. report card grades.

At first, points given after each problem worked correctly, but gradually delayed. BU filled pages redeemable by color for weekly field trips, circus, swimming, daily snack, money, store items, or long range goals (inexpensive watches, 2nd hand bikes, clothes). Marks placed after Ss' name for disruptive behavior other than being out of desks. Daily, S with fewest received 60 pt. reward. Other Ss received pts. depending on their position in hierarchy of blackboard marks. If more than 4 marks received, some privilege lost that day. Reports from public school teachers gave points or resulted in loss of store privileges for one day. Gift items for Ss' families available at store to increase interest in program. Marked squares on 4 different colored pages in folder.

Procedures: Target behaviors of experimental Ss were reinforced. Two special studies conducted: Experiment I: With 2 Ss (6th grade), study conducted to determine whether choice of materials was at least partially a function of point distribution. Maximum points for reading unit changed from 90 to 52 for 7 sessions, back to 90 for 8 sessions, then to 52 for 5 sessions, and back to 90 for 10 sessions for S_1. For S_2, points increased from possible 60 to 120 for 20 sessions, and back to 60 for 6 sessions.

Results: S_1: Approximate number of stories read varied according to possible points per story, this way: 4, .5, 3, .4, 4 (estimated from graphs). S_2: 0, 1, 0. Experiment II: Study conducted to determine effects of point manipulation on 3 alternative behaviors of 11 Ss. Data were kept for each individual student. After first few days, 4 Ss worked in only 1 workbook. 7 Ss worked in at least 2 workbooks. 1 S worked in all 3 notebooks for 4 wk. After Ss' behavior stabilized, number of points to be earned in each workbook was shifted in attempt to increase rate of behavior which occurred least frequently. When shift in points did not increase the behavior, adjustment was made. After changes did occur for several sessions, points were again shifted back to baseline or new values. For 1 exceptional S, announcement of no points reduced those behaviors to 0. When baseline condition was reinstated, previous behavior pattern in all 3 books returned only temporarily. Results: When number of points were shifted, workbook rates shifted correspondingly.

Results: Overall results of token reinforcement system with entire group: Median gain of experimental group on SAT: 1.5 yr.; control, .8 yr. Last 6 wk. report card grade averages compared to previous yr., median gain of experimental group, 1.1 points; control, .2 points. Attendance for experimental group averaged 85%, range 65-100%. Program met on Saturdays and most regular school holidays (the latter at request of Ss).

Comments: Average earnings, $225, range $167.05 to $278.08. Total cost including improvement parties averaged about $250 per student. Cost could be significantly reduced by using reinforcers in this setting (e.g., recess, movies, athletic, and social activities). Exposure to reading seemed to change operant level of reading behavior so that return to baseline often did not return reading behavior to original level. Monetary contingency for T's assistants was linked to their Ss' productivity. Also contingencies for further academic work, attendance, good behavior, report card average improvement from the regular school teachers, member of Ss' families, natural environment and teams of Ss. Productive Ss acted as tutors and checkers. Party was held at end of report card period for all Ss whose grade average was B or better (dining at restaurant, camping, airplane ride).

Wolf, M. M., & Risley, T. R. Reinforcement: Applied research. Paper presented at the meeting of the Learning Research and Development Center, University of Pittsburgh, June 1969.

Wood, W. S. The Lincoln Elementary School project: Some results of an inservice training course in behavioral psychology. Educational Technology Monographs, 1968, 1(2), 5-6, 16-21.

3 short reports written by teachers who modified behavior of some of their students. Problems cited are Ss giving up too easily, throwing tokens away or giving to a friend. All projects were successful. BU reinforcers included candy, privileges. Structure of the situation is important.

Zimmerman, J., Overpeck, C., Eisenberg, H., & Garlick, B. Operant conditioning in a sheltered workshop. Rehabilitation Literature, 30, 326-334. (Reprint)

Subjects: Mentally retarded adults. Data presented on 13 Ss.

Followup of Zimmerman, Stuckey, Garlick, & Miller (1969) which demonstrated clearly (1) successful application of token reinforcement systems to problem of accelerating productivity of a group of multiply handicapped adults and (2) differential effects of systematically applying instructions on such productivity. By emphasizing objectives, quantitative assessment of rehabilitation practices possible. Such approaches, authors felt, should be more generally implemented and use could lead to rapid identification and development of effective treatment and to elimination of practices that are ineffective or perhaps psychonoxious. Purpose of present report to describe additional results obtained by applying general approach in sheltered workshop. Use of isolation-avoidance procedures and production-contingent work reinforcement to stimulate productivity discussed. Data presented suggesting that information of crucial significance to client's program can be obtained merely by virtue of continuous quantitative monitoring of behavior per se. Essential aspects of this approach identified. Work area, task, and materials handling procedures described in Zimmerman, Stuckey, Garlick, & Miller (1969) similar in this study. In general, S worked 6-8 hr./day in industrial services. Paid on Friday, piecework basis, for work completed previous Friday. Work reinforcement procedures described in this report similar to token reinforcement procedures in that they make reward contingent upon specified work rates. However, while token reinforcement procedures can be economically used with group of clients, authors feel application on individual basis would be impractical. In contract, work reinforcement can be simply arranged with individuals if several different jobs are available and if supervisor is given

some latitude in assigning daily work. Like reinforcement procedures, isolation-avoidance procedures also make use of specified production criteria. Unlike reinforcement procedures, however, they involve use of aversive consequences, potential isolation of client from his group. Authors frequently choose this procedure because: (1) It is functional. Consistent observation: Permanent gains in production following removal of avoidance contingencies contrasted with results of token study. With at least half the clients whose production increased with token reinforcement, work rates observed to decrease to initial baseline values after tokens removed. Apparent functional superiority of avoidance procedures might be accounted for by fact that when reinforcement is discontinued, environmental changes are highly discriminable, while when avoidance contingencies are discontinued following successful avoidance behavior, environmental conditions do not markably change. Although more data required before generalization about comparative treatments could be supported, present evidence is reason enough to continue to use isolation-avoidance procedures. (2) Isolation-avoidance is realistic rehabilitation procedure. Business community does not directly pay workers to dress and behave appropriately. Such behavior is expected, and employees perform appropriately in order to retain employment. Community usually applies some minimum standards of productivity and continued employment is usually contingent upon maintenance of standards. (3) Isolation-avoidance procedure treats clients with dignity. Such treatment involves arrangement of set of conditions designed to give client every opportunity to realize maximum potential. Opportunity to approach maximum potential is possible for handicapped persons by providing choices, alternatives, and responsibilities similar to those afforded people who are not called "handicapped." Procedures are neither "cruel" nor "punitive." Focus upon constructive rather than upon undesirable behavior.

During isolation-avoidance, when Ss completed specified amount of work, could work at table with other trainees on following day. If failed to meet goal, would be isolated from group for 1 day. Goal on that day would not apply and S would work at separate station with his back to group. During contingency management procedure, S could earn privilege of selecting work for 1 day from choice of 3 available jobs by completing specified amount of work at specified rate/hr. On days in which S earned job choice, no work goals would be used. 1 S told she could type "highly preferred work" for 1 hr. whenever she met previous goal on 2 successive work days.

Author emphasized that even in absence of ongoing assessment of treatment, meaningful data can be obtained.

Zimmerman, J., Stuckey, T. E., & Garlick, B. J. Effects of token reinforcement on productivity in multiply handicapped clients in a sheltered workshop. Rehabilitation Literature, 1969, 30, 34-41. (Reprint)

Subjects: Multiply handicapped in community sheltered workshop. Prognoses for future productive employment in community extremely poor. 16 Ss. All but 2 mentally retarded; all but 1, other handicaps. Each S worked five 6 hr. days/wk.
Stimuli: Industrial services. Assembly line.
Consequences: Point card. BU tours, arcade, opportunity to work extra, be counseled by staff member, games, jewelry, candy. Represented in catalog.
Procedures: P-1: Token training, 2 wk. (noncontingently). 6 wk. period between token training and baseline period. P-2: Baseline period, 7 wk. Standard workshop conditions. P-3: Practice period, 2 wk. Verbal information about production and points given at end of day. P-4: Points. Verbal information given at end of day. Appropriate number of 100 point cards dispensed. Points earned could be exchanged daily, 2 wk. P-5: Alternation period, 2 wk. Verbal information about production and points given at end of odd days. P-6: Baseline period II, 2 wk. Removal of experimental conditions.

Results: Productivity increase significantly during practice, again during points. Productivity under points was significantly higher than under practice during alternations. P-6: Productivity significantly lower than under points, higher than in P-2.
Comments: Instructions were given at the beginning of each day concerning productivity and consequences.

accompanied by verbal reinforcement, then delivered contingent on performance of instruction given to group. (Instructions unrelated to specially devised list). Delay of BU reinforcer extended to 10 min. Fourth, instructions given to group; Ss were token and verbally reinforced as before, but only token exchange occurred at end. Ss had to be seated for exchange. Instructor helped Ss count tokens. If 5-9 earned, S could choose from bottom row; if 10-19, all but top 2 rows open; if 20 or more, all rows were open. P-3: Baseline. 3 sessions. P-4, P-5: Initial token and second token conditions: During 1st 2 sessions, procedures of 4th training session used with special list of instructions. Ss had to earn 20 tokens to gain free selection in "store". In all subsequent sessions, freedom of selection determined on individual previous performance. Two additional sessions held to make certain that Ss associated verbal reinforcement and token delivery. Final control and final token conditions: 3 sessions of each condition conducted as before.
Results: Token reinforcement generated and maintained higher frequencies of instruction-following behavior in 4 Ss. Behavior of 2 Ss did not appear to be influenced by system, although some data suggest that token reinforcement may have been successful at particular stages of experiment. Both these Ss followed most instructions independent of conditions. 1 S failed to follow any instruction throughout study. Response totals of 3 of 4 Ss with whom system was successful increased when words "that's a token" were added to verbal reinforcement in T2 sessions, though causal relationship may not have existed. Procedures revised after pre-control session to maximize incompatibility of obtaining reinforcement while simultaneously engaging in disorderly conduct (e.g., being out of seat). After several revisions, final list of instructions contained well defined and observable behaviors in repertoires of Ss. Three additional sets of observations described. Appearance during token sessions of Ss helping each other obtain reinforcement, effectiveness of TO, apparent relationship between token reinforcement potency and nature of S's attentional problems. List of 30 instructions included.

Zimmerman, E. H., Zimmerman, J., & Russell, C. D. Differential effects of token reinforcement on "attention" in retarded students instructed as a group. Paper presented at the meeting of the American Psychological Association, 1968. (Also, Differential effects of token reinforcement on instruction-following behavior in retarded students instructed as a group. Journal of Applied Behavior Analysis, 1969, 2, 101-112).

Subjects: 7 retarded boys. 8-15 yr. old.
Stimuli: Directions. Regular classroom adjacent to classroom used for timeout and observation.
Responses: Attending behavior (1) under conditions in which class was addressed as a whole and (2) as a function of the application of 2 sets of common response - contingent consequences.
Consequences: Poker chips. BU edibles, balloons, whistles, toy cars, books, and trinkets.
Procedures: P-1: After pre-control condition, procedures standardized. In baseline condition of 3 sessions, instructor read list of 30 classroom instructions. 25 directed to group 5 to individuals. Each instruction read twice. E verbally reinforced any S who responded appropriately. Incompatible behaviors ignored except aggressive behavior or tampering with "store" followed by timeout not to exceed 20 sec. P-2: Token training. In 1st of 4 sessions, poker chips dispensed on non-contingent basis, accompanied by edibles. Tokens taken back upon receipt of edibles. Second, Ss had choice of 3 edibles, and delay token delivery and exchanged increased. Tumblers to hold each S's tokens and the "store" containing small edibles, balloons, whistles, toy cars, books, and trinkets introduced. Parents and teachers consulted to determine BU reinforcers. Third, tokens delivered to tumblers and Ss called up after each delivery for exchange. Reinforcers arranged by impressiveness in store; Ss allowed to choose at this time from less impressive reinforcers on bottom row. Tokens,